THE

Southern Agriculturist,

AND

REGISTER OF RURAL AFFAIRS;

ADAPTED TO THE

SOUTHERN SECTION OF THE UNITED STATES.

VOL. VII.

FOR THE YEAR 1834.

THE LIBRARY OF CONGRESS

By JOHN D. LEGARE, Editor.

CHARLESTON:
PRINTED AND PUBLISHED FOR THE EDITOR, BY A. E. MILLER,
No. 4 Broad-street.

1834.

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THE

SOUTHERN AGRICULTURIST.

JANUARY, 1834.

PART I.

ORIGINAL COMMUNICATIONS.

ART. I.—*On Rotation of Crops, as adapted to the Southern States; by* J. HAMILTON COUPER.

Being a continuation of "An Essay on Rotation of Crops," published in the VIth Vol. of this Journal, page 57.

"Hopeton, October 21, 1833.

Dear Sir,—When you requested, for publication, a copy of the Essay on Rotation of Crops, which was, many years ago, prepared for the inspection of a few members only, of an Agricultural Society of my immediate neighbourhood, without any expectation that it would be exposed to the criticism of a more enlarged circle, I promised to resume the subject; and by the suggestion of a few hints for a succession of crops for the sea-board of South-Carolina and Georgia to complete the plan which I had originally proposed to myself in that essay. In attempting the performance of this promise, I have almost to regret having assumed a task, the proper discharge of which, requires a more enlarged experience than I possess individually, and a greater collection of facts on the part of the agricultural community than has hitherto been made. In the absence of that more complete knowledge, which the subject requires, I must content myself with partial views and brief suggestions: I will, however, be reconcil-

ed to this necessity, if by the few crude observations that may fall from me, the attention of enlightened planters may be awakened to a subject of high importance to our agriculture, to one, which Sir John Sinclair justly says, "is the most prominent feature in good farming," and "as peculiarly constituting what may be called, *the soul* or essence of husbandry; in short, as the true ground-work of general improvement; and, if well understood, as the most likely means of promoting the cause of agriculture, and the interests of the country."

Necessary as is the investigation of this subject, as a question of economy, even in countries where fertility of soil is maintained by skilful cultivation, it assumes with us a much higher importance, when it is reflected that the system of agriculture, hitherto pursued at the South, has been in utter disregard of the principles of the convertible husbandry; and that the impoverished state of the lands, which have been long under cultivation, imperatively require the adoption of every plan of renovation.

In noticing, in the former part of this essay, the fact that when, by the continued culture of the same plant, for a series of years, the soil refuses to produce it any longer, it is still found capable of bearing a luxuriant growth of others of a different family, a regret was expressed that science had shed so little light on the causes of this important law. This obscurity having, in a great measure, been removed by researches that have been instituted since that remark was made, and which have developed some novel and important views on this subject, a brief notice of them will not be inappropriate on this occasion.

Brugmans, having placed a plant of rye-grass in a vessel containing pure water, observed each morning, at the extremities of its roots, a mass of vicious matter that had exuded from them during the night; and which when removed, was renewed by the next day. Plenck, Humboldt and Decandolle, following up this discovery, have attributed the injurious or beneficial effect, certain plants produced on each other, when growing on the same soil, either simultaneously or in succession, to the peculiar character of the exudations from their roots; which the distinguished botanist, last named, observes, are those portions of the proper juices of the plant that not having served the purposes of nutrition, are thrown off as noxious or

useless, when they arrive at the lower extremities of the vessels which contain them.*

M. Macaire, in an essay, a synopsis of which is contained in the 23d vol. of Silliman's Journal, has given a further developement to this important discovery. By a series of well conducted experiments, he has confirmed the observations of Brugmans and Decandolle, and shewn that the excretions from the roots of plants are injurious to themselves and to others of a similar organization: and that, consequently, the same, or similar plants, cannot continue to flourish long in the same soil, as it gradually becomes charged with matter noxious to them. He has further proved that the exudations which are hurtful to the plants from which they proceed, or to those resembling them in character, form a salutary food for others of different natural families.

These discoveries threw a strong light on the rationale of the theory of rotations: and while they confirm the principles previously established, enables us to apply them with a distinctness of knowledge of which the subject was not before susceptible; and at the same time remove many of the difficulties which formerly surrounded it. The necessity of a change of plants is proved by them, since, under any system of manuring and cultivation, if the same vegetable continue alone to occupy the soil, there will be an accumulation of excrementious matter, hostile to its healthful growth, and which is best removed by the roots of plants of a different character.

As every rotation of crops should be carefully adapted to the peculiar circumstances of the climate, soil and local wants, it is obvious that the systems applicable to any country, admit of as great a diversity as there are differences in these particulars. To attempt, therefore, to enter into an examination of all that are required for the different parts of even one state, would be as difficult as tedious, and beyond the limits prescribed to such a communication. It is merely proposed, therefore, after a few general remarks on some of the more striking peculiarities of the climate, soil, and plants of the sea-board of Georgia and South-Carolina, to limit the examination of the systems of rotation to a few, which it is believed, are best

* Flore Française, t. 1 p. 191.

adapted to the kinds of land usually cultivated in this district generally, but more particularly to those, of that portion of it, in which the writer resides. This course is adopted from the conviction, that the suggestions of systems suitable to the other portions of the Southern States, will be more ably supplied by those better acquainted with their local peculiarities: and that it will be more useful to enter into a minute examination of a few rotations, than to present, in a more general manner, a mere enumeration of a greater variety.

Placed on the verge of the tropics, and with an atmosphere tempered by the Atlantic ocean, and the vicinity of the Gulf-stream, the sea-board of South-Carolina and Georgia possesses a climate partaking of the character of the temperate and equatorial regions, and one well adapted to the cultivation of many of the most valuable plants of both. While our long and warm summers enable us to grow in the greatest perfection cotton, rice, sweet potatoes and peas; and in a portion of it cane, the modified heat yet permits the profitable cultivation of Indian corn, Guinea corn, oats, barley and rye. If to these be added tobacco, hemp and indigo,* to which the climate is adapted, although they are not generally grown, it will be found that to but few portions of the globe, has nature been more liberal in the variety and richness of its vegetable productions: and that but little is left for regret, except the unfitness of the climate for wheat, clover, and the usually cultivated perennial grasses.

Many of these plants would alone, form a source of wealth to any country, even under the disadvantage of being grown alternately with others of very inferior value. How peculiarly fortunate therefore, are we, in being able to cultivate a number of plants, many of which are of the greatest value, and are yet so various in character as to admit of being combined in a course of crops, fulfilling the conditions of an enlightened agriculture, and yet, without sacrificing to any material extent, immediate returns for future profits. When the reduced state of the fertility of our soils shall forbid the continued culture of a few favourite plants, this important advantage will be duly appreciated.

* As the vine and the olive do not enter into a system of rotation, they require no notice in such an essay.

The proximate position of the district under consideration to the tropics, distinguishes its climate from those, from which our rules of agriculture are derived, by several peculiarities, which, as they require an essential modification of those rules before they can be applied advantageously to practice, it is necessary to consider. The most important of these are, the greater heat and longer duration of the summers, shorter and milder winters, and more strongly marked vicissitudes of wet and dry weather.

From the intensity and long continuance of the summer heat, the sun is, in this climate, the great exhauster of the soil: whence arises the necessity of selecting, as ameliorating plants, such as by an early, dense, and protracted vegetation, cover the soil during the whole of the growing season. This circumstance also indicates the propriety of immediately replanting the land in some new crop, when the first has arrived at maturity, and been removed before the end of the summer; as potatoes and peas after barley, oats and rye: and of combining quickly growing plants with those which although not removed, yet by an early maturity, leave the soil exposed to the action of the sun. The practice of planting peas and potatoes among corn is well calculated to accomplish this last object.

As the shading of the land from the exhausting influence of the sun, prevents the evaporation of the vegetable food remaining in the soil; and as the new supply of manure which the spontaneous vegetation adds by its decomposition, at the close of its growth, are among the most beneficial effects of a grass-fallow, it is obvious that the vicious system, so prevalent, of feeding bare, by large stocks of cattle, the fields that are nominally thrown out to rest, can not be too strongly reprobated.

The mildness of our winters offers advantages in the cultivation of double crops, which have not been sufficiently appreciated: and admits of the combination of several crops, that could not otherwise be associated together; as turnips, mangle-wurtzel, and carrots, with Irish and sweet potatoes, oats, barley and rye.

Those who have been at all observant of the seasons, cannot have failed to notice that, although subject to considerable derangement, there are two periods of heavy rains in this climate: the first occurring in January and February, and the second in July and August. And that there

are also two periods of severe drought; the one from the middle of April to the middle of May, and the other in October and November. These trying vicissitudes of rain and dryness, render it expedient to combine together crops that admit of being planted and harvested at the seasons most favourable to those operations. The intensity of the heat and the long continuance of dry weather, exclude from our courses of crops most of the valuable perennial grasses, and will probably continue to do so, unless hardier kinds are introduced from among those, indigenous to hot climates. The luxuriant growth on the prairies of the West, and in our own savannahs; together with the successful experiments recently made with the gama-grass, encourage the hope, that when our agriculturists shall break from the leading strings that have hither bound them to the practice of northern husbandry, and shall look to their own experience for lessons, and to the native productions of their own country for plants, that the deficiency of grass-lands will no longer be felt among us. Whatever, however, may be the future improvements made in the cultivation of perennial grasses, it is obvious that our climate points to the propriety of growing for ameliorating and green crops, umbrageous and tap-rooted plants; and that it is to the leguminous family that attention is particularly to be directed.

The striking difference that exists in the lands forming the maritime districts of South-Carolina and Georgia, not only in their composition and fertility, but also in their relative elevation, renders it particularly necessary to adapt the plants selected, to enter into a rotation of crops. to the character of the soil. It will, however, be unnecessary to notice here the endless varieties that are found between the two extremes of pine-barren and tide-swamp, as it will be sufficient for the purposes of this communication, to class them under the two leading divisions of sandy and clay lands; and to subdivide the latter into swamps, with and without a command of water for the purposes of irrigation.

The adaptation of plants to different soils requires a thorough knowledge of their organization and habits of growth. To give a full developement of these peculiarities, would require separate treatises on each plant: all that can, however, be here attempted, is to give succinct notices

of some of the most important features of those now cultivated as field crops, in the district of country under consideration.

Cotton, cow-peas, *(Dolichos catiang,)* and its varieties, ground-nuts, *(Arachis hypogæa,)* pumkins, sweet and Irish potatoes, turnips, sugar-cane, rice, Indian and Guinea corn, oats, rye and barley, form the most valuable crops successfully grown.

Of these cotton, cow-peas, ground-nuts, sweet potatoes, turnips and rye, are peculiarly adapted to sandy soils; and rice, sugar-cane, oats and barley to clays: while pumkins, Indian and Guinea corn, succeed in both, as do also cotton, peas, sugar-cane, and Irish potatoes, when the soil possesses sufficient friability and fertility.

Classed according to their organization, cotton, peas, ground-nuts and pumkins are *tap-rooted:* sweet and Irish potatoes and turnips, are *tuberous rooted;* and cain, rice, Indian and Guinea corn, oats, barley, and rye, are *fibrous rooted* plants. With reference to the system of leaves, the *broad leaved* are cotton, peas, pumkins, ground-nuts, sweet and Irish potatoes and turnips: and rice, cane, Indian and Guinea corn, oats, barley, and rye, are *narrow leaved.*

From this enumeration it appears that cotton, peas, ground-nuts, pumkins, potatoes and turnips, are less exhausting to the soil than cane, corn, oats, barley and rye; and that under judicious management they may be made ameliorating crops. Rice, which, if submitted to dry culture, would be exhausting, becomes an enriching plant, when the water with which it is flowed, is taken from rivers charged with the detritus of fertile lands.

From this review, it follows that on *sandy* soils, cane, Indian and Guinea corn and rye, which are exhausting plants should be alternated with cotton, peas, potatoes, turnips, and pumkins, that are of different character. And that on *clay* soils, cane, Indian and Guinea corn, oats and barley with cotton, peas and pumkins; and that, where there is a command of water, rice should be introduced. Of these plants, the great value of cotton, rice and cane as marketable crops, requires that they should be repeated as frequently in every rotation, as may be consistent with the maintainance of the soil in a proper state of fertility: while the superiority of Indian corn and sweet potatoes over all other plants cultivated by us for provisions, ren-

ders it advantageous, that they also should enter into every rotation, unless from peculiar circumstances, it is found more advantageous to devote the labour of the plantation entirely to the production of marketable crops, and with their proceeds to purchase provisions.

Among the plants that recommend themselves to our attention for secondary and ameliorating crops, the cow-peas and its congeners stand conspicuously pre-eminent. No other plants among us are so well adapted to every variety of soil, require less labour in the cultivation, are more umbrageous, and yield a greater mass of vegetable manure, in proportion to the nutriment derived from the land, exhaust the soil less, or are quicker in growth. They are to Southern agriculture the succedaneum for the red clover of the North: and when they shall be cultivated by us for green crops, to be ploughed in for manure, or cut early for provender, it may be predicted, that they will produce a most important revolution in the cotton growing States.

(*To be continued.*)

ART. II.—*Remarks on the Comparative advantages of cultivating fine and superfine Sea-Island Cottons; by* WHITMARSH B. SEABROOK.

"Charleston, September 10th, 1833.

Dear Sir,—Some time since, I addressed a letter to the Hon. Whitemarsh B. Seabrook, requesting some information relative to the culture of Cotton on Sea-Islands, and other matters, interesting to the planters of the sea-board. With great promptness and politeness he answered my queries; and as I consider the information given, too valuable to be retained for my own use, I forward you an extract, for publication in the *Southern Agriculturist*, and

should it prove acceptable to you, I will furnish you with other extracts.

I remain your well wisher,

J. S. S.

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Extract.—"Within the last four years, the attention of the sea-island planter has been mainly directed to the discovery of seed, which would yield the finest cotton. So general and so assiduous are his efforts, even now on this subject, that, it would seem, the prosperity of this portion of our fellow-citizens is, in some measure, identified with the finding out of the "great secret." As long as our exertions were circumscribed within the limits of discretion, our interests were not only promoted, but the cause of agriculture was essentially advanced. At this time, however, we are led by a treacherous light—false notions are engendered and circulated, and the unreflecting planter feels restless and unhappy at the annunciation of the news, that his neighbour's cotton is finer than his own, as practically testified by the difference of price in the market.

"I am decidedly of opinion, that the cultivation of fine cotton is more profitable than that of the common descriptions. Experience has satisfied me on this point; but it is not every cotton of a silky texture that is profitable. On the contrary, if the ambition of the planter be to signalize himself as the highest seller, he may attain that end, but I, by no means, admit that he will be benefited in any other respect. You will at once, perceive, my dear Sir, that, in relation to this matter, great care and discernment are necessary, and, I may here venture to say, that certain immutable rules are to be followed. What is the object of the planter, and to what point do all his efforts tend? The making of money. How is this to be accomplished in the surest and most economical way as regards labour and time? That is the next inquiry!—The aim of the spinner is to obtain a fine, strong, and long staple. If the first quality be unaccompanied by the second, the article will be comparatively worthless.—Strength of fibre is more requisite than length. Although the latter greatly enhances the value of cotton, still, I believe, it is not absolutely necessary in the fabrication of

fine goods. But ought our exertions to be guided solely by the wants of the spinner? Is price without production to regulate our actions? Such, it would seem, is the general impression, but, I apprehend, that my fellow-labourers will soon have cause to regret a perseverance in this belief. If A makes 200lbs. per acre, and sells at 35 cents, can there be a doubt that he is doing a better business than B, who realizes but 100lbs. to the acre, though he may have disposed of his crop at 60 cents? It is true, that the self-love of the latter is gratified by the frequent recurrence by the public to his name, but it is no less true, that the first is sensible of a great addition to his pecuniary means, and, although, the reputation of his brand, in the estimation of his neighbours, be not high, yet, he alone feels its importance and worth.

"From these considerations, it is manifest, that the profits of the cotton crop depend as much, if not more, on production than on superiority of staple. I believe it is a conceded point, that the very finest cottons are comparatively unproductive, delicate, and susceptible of disease. So far experience and observation have confirmed this position. Last year, the difference in product between the fine and superfine cottons, if I may so speak, or those which commanded respectively 40 and 60 cents, was from 80 to 100 per cent. in favour of the former. The present season the disproportion in the main, will be, perhaps, as great.

"To these reflections, it may be added, that there are several strong objections to the cultivation of superfine cottons. In the first place, they require land naturally or artificially very strong. The quantity of manure usually placed on an acre must be doubled. To effect this, more labour and time are necessary, and, hence, in that proportion, the value of the article is diminished. Again, they are difficult of preparation for market. Whilst he who sells at a profitable price may gin daily to the hand from 30 35lbs., the owner of a more celebrated brand can with difficulty extort from his labourers the one-half of that quantity. These items in the debit account which seem not to have been considered by the planter, do impair very materially the pecuniary worth of those cottons, in the raising of which, it is too generally considered, our interests are inseparably identified. But you may ask,

are there not plants in relation to which these disadvantages do not exist, and that combine in their highest attainable state, production; with fineness, strength and length of fibre? Without hesitation, I answer, No. In the absence of conclusive facts on this subject, I assert that, the affirmative of the proposition cannot be supported by reason or analogy. There is nothing that can be made perfect by the labours of man, and I may add, that the wisdom of God designed, that every thing on earth should be deficient in some properties, in order that modications and improvements in the works of nature might be the result of the exercise of those powers with which his creatures are blessed. Knowledge is progressive, and we are influenced by various motives to extend and enlarge it. If the great desideratum which we have so long and so zealously endeavoured to discover, could be found out tomorrow, what would be the consequence? The supply would in a few months exceed the demand, prices would necessarily fall, and there would be nothing in after time to stimulate our industry, or to prompt us to better our calling. Having attained the very summit of our wishes, and the incentive of competition no longer existing, we would doubtless relapse into a state of listlessness and indifference, and our situation would in no respect be enviable.

"Thus, it would appear, that, whilst the valuable properties of a particular cotton plant, (and the remark is applicable to every plant, and all the works of nature upon which the labour of man was intended to operate,) may not be found in another, yet, to compensate the latter for this disadvantage, nature enriches it with some equally valuable qualities, of which the first is not in possession. In this way the gifts of Providence are divided, if the expression may be allowed. Our object, then, (and it is a powerful stimulant to exertion,) should be to discover by personal examination and trial of those plants, which combine in the greatest degree the various properties wanted by the buyer and seller: and here, let it be borne in mind, that if the former requires a fine, strong and long staple, the planter must have and cannot dispense with production. By production, I do not mean simply the number of pods on a stalk, but chiefly the quantity of cotton which the fruit contains. One reason against the raising of su-

perfine cottons, is to be found in the fact, that 4 or 5lbs. in the seed, will not yield more than 1lb. in the ginned state. In the selection of seed, be guided mainly by the health of the stalk. Choose those plants, therefore, which, from long experience, or the experience of a single year, especially if the season has been unpropitious, are distinguished for their hardiness and exemption from disease.

"Upon the whole, if I were compelled to decide the point, I should say, that fine cotton as distinguished from the extra-fine, or that which commanded the last season about 40 cents per pound, is the most profitable crop that is now raised. Of the two, I prefer a healthy and hardy plant with a staple moderately silky, to one deficient in production, though remarkable for the superiority of the fibre of its fruit."

ART. III.—*Notice of a new and valuable Indigeneous Grass, (Leersia Orizoides); by* N. HERBEMONT.

"Columbia, (S. C.) November 23, 1833.

Dear Sir,—It is always a source of pleasure to the lover of his country, to learn that a new article has been brought into cultivation, and it is my good fortune to announce to the public, through your *Southern Agriculturist*, the culture of a new grass in this State. This grass is the "*Leersia Orizoides.*" A very respectable merchant in this place, who is also a very industrious, enterprising and judicious planter, Mr. Richard Sondley, accidently found on his plantation, in Newberry District, two or three years since, that a grass, which grew in his low grounds among the trees and bushes, filled the ground almost completely after he had cleared it for planting, He tried it and found his horses and stock eat it greedily, and he, therefore, left the ground to this grass, and has now for two years brought several hundred bales of the hay to Columbia for sale, besides the full and most abundant supply required for

his plantation stock. This has been pronounced by good judges of a very superior quality, and is likely soon to blot out that unpardonable sin of our agriculture, which has hitherto left us dependent on the North for the very forage for our horses. The "*Leersia Orizoides*" grows naturally in wet low lands, and will, probably, before long, be cultivated very extensively in such swampy soils as are unfit for the cultivation of any of our usual agricultural staples, except at a very great expense of draining. If it be true, that, "he who has caused two blades of grass where only one grew before, deserves more of the world, and particularly of his country, than the greatest conquerer," Mr. Richard Sondley merits all and more than we can bestow on him of thanks and praise.

This grass being perennial, it may be propagated by dividing the roots and transplanting them, or by sowing the seed. We hope Mr. Sondley will take proper measures, (and we beg to recommend most earnestly to him, to do so,) to have the next season as much of the seed of this grass gathered as he conveniently can, and to have it for sale at his store. The quantity of the hay produced per acre is not precisely ascertained; but Mr. Sondley thinks that he finds it as profitable as the same land would be if cultivated in cotton. If so, there is every reason to hope, that it will be, in due time, cultivated extensively enough to stop up those ruinous drains of our money, in the shape of horses, mules, or cattle, which are brought every year from other States and sold to us at enormous prices. We may also hope to see yet, the city of Charleston supplied with hay from our upper and middle districts, and that, instead of seeing boat-loads of hay coming up the river, we shall witness fifty times the quantity go down for the supply of the low country, unless, indeed, the low country should supply itself by its culture. This, though it may be desirable to a certain extent, is not to be fully expected, as the lands most suited for this grass are also the best for the production of rice.

Every effort of this kind deserves encouragement, and some incentive should be offered to induce our agricultural fellow citizens to seek and discover more objects of that wealth, that lie yet concealed and unused in the extensive uncultivated lands of our State, where we may expect a continuation of nature's favours to our soil and climate.

We have now several native grasses that have proved most valuable; crab-grass, *(Digitaria sanguinalis.)* The crow-foot grass,(*Eleusine Indica*) among the annual grasses, and the Gama-grass, *(Tripsacum Gama or monostachyon,)* and the *Leersia Orizoides* among the perennial ones. The great advantage of this or a greater variety is, that if one kind does not suit the soil of any particular plantation, another probably will. Thus the Gama-grass will grow well, and is most productive in a variety of situations; but particularly in high and dry land, either fertile by nature or rendered so by manure; and it is stated that it is also found on moist soils. The "*Leersia*," on the other hand, has only been found on rich bottoms, and promises to be most thrifty and productive in such marshy lands as are most difficult and expensive to be rendered fit for the culture of our ordinary staples; whereas it only requires for this grass that the ground be well cleared, slightly ploughed, sowed and left to grow, and be cut and cured for hay. The other two grasses are two well known to require any observation of mine at present. I shall only notice that the crops of Crowfoot failed nearly entirely the last season, from the most uncommon drought and heat of the later half of the summer. The Gama-grass suffered this much, during the same period, that it did not grow as much as it had during the spring and the first half of the summer; but, we must not forget that before this unfavourable weather came, it had been cut *five times*, and had therefore yielded already a great crop of excellent hay.

I have thus, Sir, endeavoured to bring to the notice of the readers of the Southern Agriculturist, a valuable acquisition to the objects of culture in this State, and if they view the importance of the subject in the same light that I do, they will readily excuse me for the intrusion.

I am, respectfully, Sir,

Your obedient servant,

N. HERBEMONT.

ART. IV.—*On the culture of the Violet Cane, as a food for Cattle; by* W. H. SPARKS,

"Bonavisture, (Lou.) July 30. 1833.

Dear Sir,—Your letter of the 24th of June is before me, I am truly surprised to learn that there is a want of original matter from the planters of your State, as well as from the South generally. My time, for the last three years, has been so entirely occupied, in attention to my plantation, that it has been with difficulty I could appropriate a sufficiency of it to the writing necessarily devolving upon me. I have no relaxation as yet, but I will endeavour to furnish you with something that will serve to fill up a few pages, though it may not instruct.

I am residing at present, in a district almost exclusively devoted to the cultivation of the sugar-cane, and where every one is so completely engrossed with his own affairs, as to afford but little opportunity for intercourse with each other; and our soil is so new and fertile as to require but little agricultural skill or knowledge, to ensure an abundant return for the labour expended. It is known to you that nothing is more exhausting to the soil than sugar-cane, and yet, it is common here to find it in the same field for twelve or fifteen years successively, and yielding well all the while. With such a soil, you may readily suppose, very little attention is paid to manures, less to rotation of crops, and still less to the introduction of any thing like science among our planters. We, as a body, are very much embarrassed, owing to the three last fatal years, and the great want of a proper agricultural economy, consequently, few have leisure for any experiments, and many of those who would, for fear of failure, which would be ruin, will not attempt any improvement, in our present method of planting: nevertheless, I conceive, there is no staple grown in our country, the cultivation of which is so little understood as that of cane—it is a forced crop in this country, and there must be something to force its approach to maturity as nearly as possible in our climate, over and above what is practised in its cultivation, on the Islands and within the tropics. Still, we are with a few exceptions, pursuing the old island method, and from those storehouses of ignorance, the Spanish Islands, we annually im-

port as new, something that has been known, tried, and rejected here, twenty times.

But, Sir, I am not disposed to send you an essay upon sugar planting, few of your readers are interested in it. I propose, however, to offer something that will enable your planters, through five months of the year, and those months from November to April, to keep fat; cattle, horses and hogs, from one-eighth of the ground that will keep them on corn. If you will turn to page 351 of your journal for this year, (it is in your July number,) you will find it stated by Mr. Nicolau, of Georgia, that the tops from one acre of corn, will go as far as the corn from eight acres.* This is not the case with us, perhaps, because our corn is so much better than that grown on the low swamp lands of Georgia. But, Sir, I assure you, that an acre of the Violet-cane will furnish an abundance of food for thirty head of cattle twenty days, and if indulged with the tops, will deep them a month.

The Violet-cane is termed by some, the Red Ribbon, by others, the Brazilian-cane, but here, it is most generally known as the Violet. I do not know that it possesses nutricious properties in a superior degree to the Striped Ribbon, or the common Creole-cane, but I know, from actual experiment, that it is better suited to our climate, than either of the others—because it resists the actions of frost longer in the fall, will keep in matrass better, is not so liable to be injured by wet or cold in the ground after planting in the spring, rises sooner, and grows off with more rapidity and vigour in the early spring. If planted in strong land, it is apt to grow large, and a slight blow in September or October, will sometimes throw it on the ground, but this does not injure it half so much as it does the Striped Ribbon, whilst the Creole-cane is utterly destroyed by it. It affords more tillers, or shoots. from the original stalk, these put forth at an earlier period, and consequently, are much more likely to make the best of a short season, than those of a more delitary character, its leaves are longer if not more abundant, are smooth, thick, and full of saccharine matter ; when properly cured, they make an excellent hay or fodder, will not mildew and rot

* Our Correspondent is mistaken in this. Mr. Nicolau in his communication, observes, " I have found that eight acres of corn will support thirty head of cattle for sixteen days, and one acre of *cane* tops will go as far as these eight acres of corn." It is *cane*, and not corn tops, which he thinks so valuable.-*Ed.*

so soon as corn-blades, or hay from any of the grasses which we possess: the rind is harder, and its juices not so abundant as is afforded by any other variety, but they are richer, and more nutricious as animal food. The former quality is an objection, when the cane is to be used for sugar, and the power for expressing the juice, animal, but to those who have an engine, I consider it superior to any cane planted in Louisiana, especially if the soil be new and strong. Its progress to maturity, also is not so much affected by the seasons, its roots are larger and sink deeper into the earth than those of any other variety whatever, it resists our long summer droughts, and will continue to grow finely, whilst it seems equally unaffected by the wet seasons of spring and fall.

If things are not much altered since 1824, yours is a sad State for rearing stock, and particularly the lower section of it. It then, seemed to me, that this branch of rural economy was entirely neglected among you. The miserable skelletons that were to be seen culling a precarious subsistence along the road margins, were painful to one who delighted in fine cattle. Every thing seemed tortured to the utmost, to produce as much cotton as possible, and was I not fearful of touching a not yet cicatrised wound, I would charge to this very fact, much of the present agricultural distress of which you now complain. But yours is an intelligent and patriotic people; the energies and capacities which you possess, will not sleep. The example of such as Dr. Ravenel, and others, will be emulated, and I have no fears but that South-Carolina will be herself again.

In Louisiana, it has been considered impossible to rear fine cattle. We have many difficulties to encounter; a long, warm and relaxing summer, a superabundance of musquitoes, and flies, a scarcity of pasture land, and worse than all, the prevalence of the maggot among our live stock, during the months of July, August and September. But with all these, Louisiana is a choice stock country, as I have proven beyond doubt: all that is requisite, is attention. There are now cows upon my place for which $250 have been offered, not three years old, of the pure Durham short horned breed, and believe me, Sir, there is not

a planter in Carolina, who will bestow the proper attention, that cannot have the same in three years.

The object of this communication is to endeavour to encourage your planters to make the experiment, of growing in abundance a proper food for their subsistence, during the winter and early spring months, and preparing a sufficiency of pasture for them during the remainder of the season; and to test my sincerity, I will furnish any gentleman this winter with a sufficiency of the Violet-cane to plant an ordinary square in his garden, (from which he can plant an acre the year succeeding,) free of charge, save the freight, from New-Orleans to Charleston. And when he will promise, that he will attend to them, and endeavour to improve the breed and condition of the cattle in the State, and state that he has ten cows, and pasturage sufficient for their entire support, I will present him with a full blooded, short horned, Durham yearling bull, and ship him to his order, Charleston.

I would direct the manner of planting the cane, but I presume this, as well as its cultivation, is understood there.

With great regard.

WILLIAM H. SPARKS.

ART. V.—*Cure for the Fistula; by* A HIGHLANDER.

" Hancock County, (Geo.) July 20, 1833.

Dear Sir,—This is a name given to large tumours, which make their appearance on or about the wethers of the horse; and are in all cases probably produced by a bruise—such as a violent blow, continued pressure or friction of illy adjusted harness, the bite of another horse, &c. Mason, in his book on Farriery, speaks of the malady as incurable, and advises the owners of horses thus diseased, to dispose of them on any terms. This opinion of Dr.

Mason, is now, however, known to be idle; and that fistula is quite as curable as pole-evil, or any other disease.

A new article in the Materia Medica of the country was lately recommended to me; which on trial, I found to be a certain and speedy cure for fistula, or *festelo*, as it is sometimes called. Having tried rowelling, Mason's prescription, and several other things, without effect, a neighbouring planter assured me that the disease could be cured in three or four days, by first passing a red-hot spindle under the skin that covered the upper part of the tumour; and applying to it in the form of a plaister, the carcase of a *toad frog*. Though the operations were clumsily performed, they were entirely successful; nothing more being needed to complete the animal's restoration to health, than to heal the sores occasioned by the spindle, and the vesicatory action of the frog's carcase—I say *vesicatory* action; for I presume it to be of that character, though no blister was visible when the carcase was removed. The hair covered by the carcase about ten hours, all came off, leaving the skin inflamed and sore for several days.

The hot spindle was applied by seizing that part of the maine which grows on or above the withers, pulling it up and thrusting the instrument through between the roots of the maine and the tendons of the neck, where it joins the shoulders. It has the double effect of cautory, and seaton, or rowel, for the discharge of matter occasioned by the burning. The frog was split open alive and applied, intestine and all, to the tumour; being afterwards well secured to the place by a bandage.

It is said on good authority, that a whitlow or bone-fellow on the finger is cured immediately, by thrusting the diseased finger into the throat of a frog; and it is equally efficacious, as a remedy for a *stone-bruise;* which in the stoney regions of the upper country, is well known as an exceedingly painful, and sometimes fatal swelling on the heel or other parts of the sole of the human foot.

Whether the toad, one of the most ill-favoured and (as generally supposed) useless parts of creation, may hereafter be found an important article in the curative art, I will not predict; but the potency, with which its carcase certainly does act on the skin and flesh of a horse, entitles it to attention. If you think the notice taken of it here,

is entitled to a place in your repository, in the writer's own words or your own, please use it. In every application of the toad as a remedy, I have heard of, the animal was alive, or nearly so as possible, when the process commenced.

A HIGHLANDER.

We regret that we are not at liberty to give the name of our Correspondent, as it would enhance the value of the communication. We can, however, assure our readers, that he is a gentleman highly distinguished, and whom every reliance may be placed on the information given.—*Ed. So. Agr.*

ART. VI.—*Observations on the Culture of Cotton near Vicksburg, (Miss.); by* M. W. P.

"July 16, 1833.

Sir,—Your communication of the 25th ult. came to hand this day, and in very good time to receive an answer, although I had written some few days since, but as it is still by me, I will withhold it, and give you an answer.

There is no man living feels a more lively interest in the success of your journal, or warm desire to see every branch of agriculture flourish than I, and I confess that there is too much neglect in farmers not giving to such papers their impression and experience, for, if either be erroneous, some one will take up the gauntlet, and give other views,—thus truth will be elicited. I have been negligent, but my farming experience is small, and not as successful as might have been, my land is nearly all fresh, and of course more or less rough. I attend closely to my affairs, make the cause my study, read every thing I can lay my hands on, subscribe to the "American Farmer," read some of the old numbers often, and make farming the subject of conversation, even with Mrs. P—. At all times, and at all places; where an opportunity offers, I endeavour to elicit the information of others, so you will perceive

I leave no stone unturned. I have felt a backwardness to see even a notice of my penning appear *in print*, but hereafter, I will write you often, and if at any time an extract pleases you, use it freely, and if you wish my opinion, or any information relative to *these parts*, make the request, and you shall be answered.

I hope your request of 25th July, may draw others out. Our crops in this section of country, have had many difficulties to contend with, the spring was exceedingly wet, raining incessantly until the 29th of May, and then dry until the 13th of July, with the exception of a few partial showers, most of which were very light. On the 8th, 16th, and night of the 19th, and on the 22d of June, I had light showers, but few of my neighbours had any. On the 9th of July, I had several small showers, cloudy nearly all that and the following day, this was a preparation for a season, which followed the one of the 13th, and I believe was general for my neighbourhood.

But seasons were nothing compared to the caterpillar, and most of all bad stands—the caterpillar made great havoc in our cotton fields, "feasting sumtuously every day," chiefly on the "hog weed," which was in abundance in nearly all our fields, the cotton not escaping, but I think I saw less where the land had been well ploughed, and more where badly ploughed; in fact, in a part of my farm, where the baulks had been ploughed out, when we bedded up, I saw none—they did my crop not much injury. I had to contend with wretched bad stands; I planted my whole crop with what we term Gulph-seed, (the cotton made near Rodney stands highest in New-Orleans) had it not been for that, I would have ploughed up, and planted over. My reason was, last year I planted two acres through the middle of my field, I had a bad stand, and made about 1000 to the acre, whereas on neither side did the cotton average more than 700lbs. to the acre. I have heard this from others. If this was a fair trial, I would have erred in ploughing up, for two-thirds of a stand would have made as much, and I had near three weeks the start of what would have been planted.

I planted cotton, commencing 1st of April and finished on the 15th, having in the mean time planted almost half my crop of corn. Previous to commencing to plant, I had bedded up half of my cotton land, the other half was bed-

ded up and planted as speedily as we could—in all, I had bad stands, except a small piece of perfectly new ground. I planted one and a half bushels to the acre, as much as I have been in the habit of using, and more than I did in 1831, that season I had a splendid stand. My cotton is now decidedly the best I have ever had at this date, and had I a good stand, I would average a bale, should seasons suit, and there be not much rain, I will run it hard.

I plant part of my crop 4 feet between the rows, and the distance in drill about 12 inches;—part 5, 6 feet and about 18 inches. I have ploughed over my crop three times, and hoed over the greater part four times. I throw very little earth to either cotton or corn, and that with a plough. I thin out to a double stand—*first time*, leaving one stalk, say 6 or 9 inches apart; second time take out every other, and am very particular in leaving but one stalk, unless a wide skip, then leave two stalks. I endeavour to keep as clean as possible, but am never alarmed at a few weeds or grass, we yet have not much. I use the Carey or Dagon plough and the shovel, both of which are inestimable in their places, but I prefer the first, particularly in cultivating a crop—in dry weather, I prefer the shovel, not turning over the moisture below. We cannot use either harrows, cultivators, sweeps (or scrapers) nor the horse-hoe, the first and third I would prefer, and will use when my land is a little freer from stumps and roots.

In picking cotton, we use sacks to gather in, (a basket being near by) when such is full we empty into the basket. A good nice sack will hold from 15 to 25lbs. some make them long, so that they may rest them on the ground, suspended over their shoulders, I am sure it is more expeditious than taking a basket along. I have tried the sack, and will use no other kind; some hands have two sacks,—fill one, leave it, fill the other, then empty both.

Our cotton turns out from the seed near about 30lbs. to the hundred. The crop of 1830, even so much as 33⅓, my last years crop about 33⅓, including bagging and rope, which would give a little the rise of 3 per cent. I will give you my corn crop in my next *soon*, until then, believe me devoted to the cause, and your well wisher.

M. W. P.

Art. VII.—*Notice of the Climate, Soil and Production of Florida; by* X. Y. Z.

"Lipona, Florida, July 15, 1833.

Mr. Editor,—The spirit of generalising in descriptions, or of drawing general conclusions from particular facts, is the prevailing deception of the age. All new countries, therefore, (if one favourable agricultural result be exhibited) are El Dorados, though they may contain as many swamps and marshes as the Carolinas, and not yield to Georgia in the extent of her pine barrens. Visiters to Florida are disappointed (without regard to the section of the territory they may wander through) at not finding oranges growing every where wild in the woods, because they have been informed, (which is the fact,) that the orange tree, if not indigenous, is occasionally among the forest growths of Allachua, and the regions of country south. I was pleased, therefore, with a notice of Hind's County, Mississippi, in an article in your June number, over the signature of "M. W. P." The writer has very properly discriminated between the high and low, or swamp lands. The extraordinary production in cotton of the latter soils in that State, in Alabama, and on the Red-river and its waters, have led too many to believe that such is the character of the whole country; and an emigration is at this time pouring into those Western regions with a confident belief that 2000 lbs. of cotton to the acre, and from 7 to 10 bales to the hand is the common crop, while the swamp lands are alone productive of the above quantity, and the high lands do not average more than from 900 to 1000 pounds. Contrasts are therefore drawn, in anticipation of realized hopes, between these lands of promise, and the impoverished, and destined to be deserted fields of the Carolinas, Virginia and Georgia.

It is not the intention of the writer of these remarks, to underrate the character of these new attractive countries; but as one, who has migrated, and who has acquired some experience on the subject, he does not hesitate to say, that the greater production to the hand in the cotton growing districts of the West, is as much to be ascribed to a different mode of cultivation from that pursu-

ed in Carolina, as from superior virgin soils. The plough is used to very great extent. I have known as many as one-half of the effective force put to the plough, and as much as 10 and twelve acres of cotton cultivated to the hand. From 7 to 10 is the ordinary crop, according to the character of the soils, in order to produce those wonderful results of which you so often read. Florida can exhibit results as favourable as any of those detailed from the more Western States. Indeed the average crops on the best high lands, of short staple cotton, will compare with any parts of Mississippi or Alabama. One thousand pounds to the acre, in a good season, would not be considered a very heavy production; I have known as much as 1500 and even 1800 pounds from particular fields. The black seed or long staple is preferred by a great many planters of Florida, and has generally been planted on their ligher or third rate quality of soils, from an idea prevailing, that that description of cotton delights in a sandy soil. The production, notwithstanding, has varied from 500 to 700lbs. in the seed, and I have known as much as 1000 produced. Judge R—. of Gadsden County, and a Mr. R—. of Madison, both well acquainted with the cultivation of sea-islands, have, for several years in succession, averaged the latter and larger quantity to the acre. The two last seasons in Florida have been very unfavourable from heavy rains, insects, &c., but notwithstanding these drawbacks, the average crop of black seed in this part of the territory, has not fallen short of 500lbs. to the acre. We have few reclaimed swamps in Florida, and these have generally been applied to the sugar-cane. Col. N., however, made a partial experiment on the Oscilla bottoms the last year, and estimates the production at 2000lbs. seed cotton to the acre.

Florida, to the extent of its good lands, in connextion with its Southern location, ought not to yield the superiority to any other new country. It is true that the quantity of good lands is very limited. Like the Oasis, in the African deserts, the fertile soils lay in islands surrounded most commonly by elevated pine hills, but not unfrequently by low bay galls, ponds or lakes. These latter situations are of course unfriendly to health; the former quite the reverse. No country for its extent offers the same agricultural advantages. Situated in a middle latitude, though

upon the very verge of the tropics, productions common to both, may, in Florida, be raised to advantage. The grains of the North and fruits of the South; the cotton of the middle, and the cane of the tropical latitudes, can all be produced to the benefit of the planter. There is no month of the year that is not a vegetating one; and the farmer can, as late as July, when an unfavourable season in the early part of the year has jeopardised the crop on which he most relied for subsistence, may still plant other grains or roots, so as to save a provision crop.

The climate is mild and healthful. The winters moderate, and the summers not oppressively hot. Elevated from 150 to 200 feet above the ocean, and within the influence of the sea-breeze, a constant agitation in the air expels the exhalations of the low lands as they rise, and moderates the intense heat of an almost tropical sun. I wish, Mr. Editor, you could be induced to extend your agricultural excursions beyond the limit of your native State and represent this fine, but not extensive district of country, as it deserves to be known. I am not among the number of those who would recommend migration. To leave the country of one's birth, and the home of one's ancestors, must require a struggle which no one without great deliberation should hazard. He who has never tried a new country, cannot anticipate the privations, labour and disappointments he must encounter in subduing the forests, in rearing a civilized home in the midst of a savage wilderness. But to those who are willing to risk all these trials, I would say let them not throw Florida out of the range of their examinations.

Should these speculations be acceptable to you, I may, at some other opportunity, detail facts to sustain them.

X. Y. Z.

Art. VIII.—*On the Raising of Silkworms in the Southern States; by* An Exotic.

"Colleton, December 2, 1833.

Mr. Editor,—I see in your interesting publication (the last November number,) several queries from a writer in Athens, Georgia, on the subject of Silkworms. In reply,

I beg leave to remark that, having undertaken to raise a crop of them, and gone to the expense of building a house which was lathed and plaistered, made rat-proof, sashed, and every necessary precaution used to prevent the attacks of insects, and vermin, and damp weather, &c., I failed from one circumstance alone, which seems to me, will ever prevent success in our climate, unless artificial means are used to remedy the defects, which is simply this—our mulberry trees put out very early in the spring, and the silkworm eggs are equally precocious. We generally have a frost in April, very often severe enough to kill, totally, the mulberry leaf. The worm is then left to perish for the want of food. Any other kind of food seems rather protracting a diseased existence, which terminates in a poor crop of silk, for as much and more trouble, than is required if the worm's natural food was abundant. The only remedy for this evil is to have an ice-house, where the eggs can be kept until late in April, when all apprehension of frost is over, and then expose them to the heat of the atmosphere, which will soon hatch them. I am satisfied that could this plan be generally adopted, silk would be more often raised by small capitalists, in preference to cotton, and the poorer the family, the more advantageous the employment. Mulberry trees will grow in any soil, and almost any climate, from transplanting, or cuttings, or from the seed. The native black mulberry is equally as good as the foreign. The growth of the worms requires only abundance of food, a clean and moderately warm house. Children and invalids would not be exposed to weather. Many who are now objects of charity could be profitably employed, particularly women, whose in-door occupation makes the attention, the worms require, better adapted to that sex than exposure to out-door labour.

I refer your correspondent to a very plain, sensible, and practical, statement made in your Southern Agriculturist, Vol. iv. p. 113, by Dr. James Davis, of Columbia, South-Carolina, from this paper he will obtain an account more suitable to his inquiries than any communication I have yet read on the subject.

Respectfully,

AN EXOTIC.

PART II.

SELECTIONS.

ART. I.—*Experiments and Observations on the Fermentation of Manures; by* J. B.

[FROM THE FARMERS' REGISTER.]

It has been often said that the experiments in agriculture which result in failure and loss, if correctly reported, would be scarcely less instructive than the smaller number which prove successful and profitable. All will assent to the truth of this opinion, but few are willing to act in accordance. I propose submitting a report of this character to the readers of the Farmers' Register, in which errors, caused by ignorance and inexperience, are at least as conspicuous as correct views; and as much of value was lost, as secured by my operations. Still, I am persuaded that even from my erroneous management and mistakes, I have received profitable lessons, and that my facts and observations may also be useful to other farmers, even if my deductions are not altogether correct.

Circumstances enabled me last winter, for the first time, to devote a considerable amount of labour to the collection and preparation of vegetable matters for manures. Having but little confidence in the truth of my own opinions as to the best management of manures, and not more in any or all of the innumerable writers on this subject, I determined to test my opinions by experiments, and to record my observations minutely for my future use. This journal of my operations, with but few alterations in form only, will constitute the present communication. Entertaining the opinion that the fermentation of coarse manures is necessary, but that great and needless loss is caused usually by that process, it was my aim so to conduct the fermentation as to avoid as much as possible the usual loss of its products.

A new site was chosen for the barn and threshing machine, the most convenient for making manure, as well as for storing the grain crops. Between the barn on one side, and the place intended for the stables and corn-cribs on the other, a space of fifty yards square was marked off for the winter cow-yard. In

October, 1832, the middle of this space was dug out to the depth of fifteen inches, and the earth moved in carts and deposited on the outer twelve feet of the square, so as to form, when completed, a basin, the middle of which was two and a half feet deeper than the raised surrounding border. This border was intended to form a dry resting place for the cattle, and also to keep in the fluid parts of the manure, and to keep out rain water from the adjacent higher ground, which (it was feared) might otherwise have made the litter too wet for the comfort and health of the cattle. The soil was a sandy loam, about six inches deep, and the subsoil becoming a sandy clay about eight or ten inches from the surface—not quite close enough to keep water from sinking, but would become so by being trampled. The middle of the basin was of this subsoil, while the outer edges and the raised borders were mostly of the lighter soil. The yard was enclosed by a straight fence,—and along the north side and partly on the adjoining east and west sides, a sloping slab shelter was made to protect the cattle in bad weather.

All the cattle, except working oxen, grass beaves intended for early slaughter, and milch cows, were penned here at night from October 15th, and a slight littering was given at first of straw and leaves, (heaped in the woods the preceding winter) and which was increased somewhat every day, by similar materials, and soon after by the stalks of the first gathered corn. As the cattle were turned, during the greater part of the day, into a clover field, they eat little or no dry food for some weeks, and during that time no more litter was given than enough to absorb the animal manure. Afterwards corn-stalks and straw were added rapidly, and leaves as often as to the other labours of the farm permitted them to be hauled. The raking of the new crop of leaves for litter, was begun October 29th, on a few acres of land covered exclusively by pines of the second growth. Pine leaves, which are considered the best for manure (and certainly are the heaviest and easiest to manage) begin to fall early in October, and by the 29th had nearly all fallen, when the leaves of deciduous forest trees were just beginning to drop. Being satisfied that every rain which falls on them afterwards, extracts some of their enriching principles, I wished to have them heaped as soon as possible after falling. At any time, leaves must furnish a poor material for manure, and much more so as usually gathered after exposure to a winter's rains. My later raking (as leisure permitted through the winter) was in woods of mixed pine and oak, part of which had been raked over the winter before, and the balance never, so that old as well as new leaves were brought in. Besides the leaves, the materials for manure were, the stalks and other forage of a crop 560 barrels of corn, and the straw of 2000 bushels of wheat—and perhaps 9000 pounds of clover hay. These were for the stable and other pens here-

after to be described, as well as this, on which no food was used except straw, corn-stalks, shucks and tops. The number of cattle from October 15th to December 22d, on this large pen, was thirty-five on an average; and forty-five after that time.

Nine mules were kept in a littered, unsheltered pen, and three horses in covered stalls in the same inclosure. The manure there made before the 12th of October, had been moved out and ploughed in for wheat, and the yard and stalls were then littered again with old leaves and staw, and (from neglect) not enough was given either for making manure, or for the comfort of the animals, until December 22d, when the litter was found to be only from four to six inches deep, compactly trodden, and wet throughout—enough so in some places for fluid to trickle from it, when dug into for examination. The horses and mules were regularly worked, and fed plentifully with corn as well as fodder or clover hay.

A third pen was for eleven working oxen, in which they had been penned on litter and fed with hay or other long forage, since October 4th. They were generally kept at work.

December 24th.—After sixty hours continuance of temperature below the freezing point in the shade, (and the nights much colder) examined the warmth of the litter in three pens, between 9 and 10 o'clock, A. M.

The litter of the ox-pen (which for distinction will be called No. 1,) was 14 inches thick in the middle, and lessened to 8 near the edges—compact and moist, but dryer than the mule litter. Two different places shewed the following degrees of temperature.

1st place, at 6 inches deep,						-	-	47°
"	"	10	"	"		-	-	49°
"	"	14	"	"	(the bottom)			56°
2d place, where thinner,								
At 6 inches			-	-	-	-	-	47°
9	"		-	-	-	-	-	52°

The mule-pen (No. 2,) when in the wet state above described, had two days before been well covered with dry leaves. In three places at the bottom of the litter and touching the earth, the temperature was 48°, 49° and 47°—and at a less depth immediately over the two first, the thermometer shewed 46° and 44°.

In the farm-yard (No. 3,) owing to the small number of cattle compared to the space, the litter was not made compact as in the other pens, and several inches of the top, which had been laid on since the last rain, (two weeks before) was loose and dry. The moist and more compact, was ten inches thick in the middle, the deepest part of the yard, and not more than four on the outer parts.

Temperature of three different places, in compact litter, where thickest,

6 inches deep -	55°	58°	57°
10 " " -	47°	58°	55°

In thinner parts of the litter,

At 3 inches deep	50°	*52°	*50½°

The two last (marked *) were under the shed on the raised border, and were most exposed to the sun from the south. In this yard, the thickest part of the litter was the warmest—and the middle of the bed was generally warmer than the bottom. In the ox-pen the litter was evidently best rotted (or the texture most weakened by the commencing fermentation) though this effect was very slight. The mule pen-litter, which is much the richest, but is also the thinnest and wettest, had the lowest temperature. *Query:* Had not the recent cold weather lowered the warmth previously acquired from fermentation? The litter of the fattening hog-pen, which was mixed with a large proportion of earth, was 42°—and the inside of a dry stack of fodder (examined for comparison) at 18 inches from the outside, and 6 inches from the bottom, was at 40°. The lowest temperature of the manure being 7° higher, showed that fermentation was going on.

January 1, 1833.—A heavy soaking rain, and the weather very warm for the season. As soon as the rain ceased, began to dig up and heap the manure of the ox-pen, (No. 1.) The oxen had not been on it since December 22d, when they had been moved to a part of the farm-yard (No. 3.) January 2d, at 9 o'clock, A. M., the temperature of the air in the shade was 51° —and at the same time the manure not yet heaped (though it had been somewhat loosened by the hoes the evening before, and *possibly* fermentation might have been thereby excited,) was 65° to 71°, in different places. The heap made between 16 and 18 hours before, was already throwing out warm vapour, smelling of ammonia, and within the bulk was found to be 99°. This unexpected heat and the ammoniacal smell was unexplained then; but afterwards, when using the manure, I learned from my overseer that when he began the heap in my absence, 20 or 30 hand-barrow loads had been brought and thrown on of the rich litter of the covered horse stalls—but finding it too dry for heaping, he had stopped any further addition.

The heaping which had ceased since the preceding night, was now resumed and finished. The whole heap, thrown up lightly by forks and shovels, and not trodden, (except a little at the last to shape the top,) was raised to seven, and in part to eight feet high, the sides cut down as steep as they would stand, and the top left depressed in the middle. A cover of wet leaves (which had been laid in the adjacent road to be trodden and absorb water, but contained no dung,) was thrown over the top to the depth of twelve inches, lying as they fell from the shovels. Over the

leaves, soil was thrown about four inches deep, and then sowed thickly with oats. This cover of earth was given, first, to keep the whole surface of the manure moist, instead of its drying and remaining unchanged six or eight inches in, as when left uncovered; second, to cause all the seeds of cheat and other weeds to sprout, and by that means to perish; third, to absorb the escaping gasses, if that is possible; and fourthly, to use those gasses in feeding the growth of oats, both to add to the bulk of manure, and to furnish a test or measure of the escape of rich aeriform fluids. The escape of visible vapour ceased with the adding to the heap. No fluid trickled from the heap, which showed it was not wet enough.

The litter of the other yards having been recently added to largely, was not wet enough to heap. No. 3, tried in different places, was at 60°, 61° and 62°.

I had never heaped manure before, earlier than the beginning of spring weather. My object now, was to have the fermentation completed with as little excess of heat as possible, and to avoid the great loss usually incurred from violent fermentation. If fermentation would go on, it seemed that cold weather would be the best to keep it moderate.

From January 1st to 4th, warmer than usual for the season, and much more so, from the 4th to the 7th. Rain on the 7th, and at night the first snow that had fallen during the winter, and a change to cold weather. Several rains and more snow by the 10th, when it became excessively cold, and continued so until the 12th. Thermometer not observed out of doors, but was at 20° between 8 and 9 o'clock, A. M. on the 11th, in my passage, which is between two rooms with good fires, and in one of which a fire was kept up through the night as well as day. On the 10th, the litter of mule-pen (No. 2,) was heaped when very wet, and mixed with the litter of the covered stalls. Being absent at the time, no observation was made by the thermometer; but from the extreme coldness of the weather, I suppose that every part of the manure must have been reduced nearly to the freezing point by exposure to the air, as it was thrown on the heap. To have as little of surface as possible, and to prevent the mules treading on the manure, the heap was made to fill a round pen of six feet high, and raised above four feet still higher in the middle, or ten feet in all. No cover of earth or leaves had been laid on. When I first saw the heap, on the 12th, there was no outward sign of fermentation having commenced; and, at eighteen inches depth from the side, the temperature was 42°. I feared that it would not begin to ferment, without a complete opening, and second heaping. Dark coloured fluid had exuded from the heap, and continued to do so for some days later, forming puddles around the base.

The heap No. 1, by January 12th, had sunk to five and a half feet high. Most of this loss of height must have been caused merely by the compression of the loose litter. No vapour had been seen to escape since it was finished, whence I supposed that the cover of the earth, by its pressure, had stopped the fermentation. But on striking into the heap with a grubbing hoe, warm steam came out. Before this there was no outward indication of the slightest warmth, except that the outside was thawed in a few spots, and snow was but thinly sprinkled on a few other places, though the ground was covered more than an inch deep. The fermentation, however, had been sufficient to rot the manure enough for me to thrust the helve of a hoe two and a half feet in the side, without much effort. The thermometer put into holes so made in different places, and about eighteen inches from the surface, showed the following degrees of temperature:

118° on the north side, three feet from the ground, and where the mixture of stable manure was made.
100° south side, at the same height.
78° another place.
68° " " one foot from the ground.
64° " " " "
62° deeper in the same hole.

Poles had been placed in the heap to show the temperature by drawing them out and feeling them. This had been done on the 10th, and it appeared that the heat was greatest about two feet from the outside. But few of the oats had yet come up, and those mostly on the south side, showing that the heat of the sun, more than of the manure had caused them to sprout.

On the 14th was the first thawing in the shade, and indeed there had been but little in the sun. Observed a barley perceptible escape of vapour from a fissure in the crust near the top of the oldest heap, (No. 1.) Began to cut away the outer part of one side of the heap, (where the greatest heat had been found,) for the purpose of examination, and to use some of the manure in an experiment. A perpendicular section being made, showed that the manure was enough rotted for use, (about half rotted) from the outside cover of leaves, to two, or two and a half feet deeper in. This best rotted part was still very warm, and in different places showed the following degrees of temperature—118°, 110°, 110°, and 100°. Some spots were "*fire-fanged*" or mouldy—and these were evidently caused in most cases by the mixture of stable manure, which I then first learned had been made. In some of these mouldy spots, the heat was 142° and 146°. The interior and lower part of the heap, from the earth to two and a half feet high, was 116°, quite moist, and more so than the upper part, but was very little reduced by rotting, from being so much compressed. The vapour poured from all this digging as from a kettle of boiling water. By the next day all

visible escape of vapour had ceased, except a barely perceptible issue at a fire-fanged spot--but it again poured out, though in less quantity, upon cutting in with a hoe, for inspection. At eighteen to twenty-four inches within the perpendicular cut, in the upper and most rotted part, the temperature had fallen to 96° —and to 90° and 92°, at the same distance within the lower and unrotted part. In a fire-fanged spot it was 112°. Dug into the opposite (south) side of the heap, and discovered no mouldiness, except a spot so small that it would have escaped common observation. On this side, the unrotted manure came nearer to the surface. Temperature two or two and a half feet in, was 93° in the most rotted, and 92° in the least. The weather had become much warmer within the preceding twenty-four hours.

The observations made on this body of manure seemed to justify the following inferences: 1st. That the heap was made too high, to allow the lower part to rot speedily; 2d. That the heat and moisture remaining in that bottom, proved that the fermentation, though retarded, was still going on, and in time, would be effectual; 3d. That as no perceptible vapour had escaped (with the single slight exception stated before,) after the heap was finished and while covered, there could not have been any material loss of fertilizing matter, from the process of fermentation. A paper moistened with diluted muriatic acid was exposed this day (January 15th,) to the vapour, as was also the open phial containing it, and no dense fumes were produced, which Davy tells us would indicate a loss.

On the 14th, began to heap the litter of the farm-yard (No. 3,) making the heap in the middle and lowest part. The litter there was eighteen to twenty inches thick. The part which remained to form the foundation of the heap, (as was done in the other cases,) was first dug and well loosened before throwing more on. The temperature was highest in the thickest part of the bed, and in different parts of the yard was 66°, 64°, 55°, 62°. To my surprise, after so much rain and snow, the litter was not saturated with water, nor indeed was every spot moist. Fearing that this would make fermentation imperfect or irregular, stopped the work, after making the heap about seven feet high, on a circular base of twenty to twenty-two feet across. Fenced it around, to prevent its being trodden by the cattle, and filled the space on the yard just cleared, with fresh litter.

Notwithstanding the change to warmer weather, this heap (No. 3,) was, on the morning of the 17th, still so much frozen on the surface generally, that on walking on it, my weight did not always break the crust of frozen litter, though the lightness of the mass caused the surface to be depressed where trodden upon. Vapour (which seemed altogether watery, from its want of odor,) was issuing from one point, the highest of the heap. The ther-

mometer sunk two feet in that place, showed 74°. No where else did the heap exhibit any evidence of fermentation being excited. In the side, one foot in, it was 50°.

No vapour was issuing from either of the two older heaps. No. 2 showed a slight internal warmth, (not measured,) but no vapour from pulling out a stick thrust in three feet deep. The heat had increased somewhat by the 19th, but still no vapour perceptible, until the heap was dug into for examination, when it issued, but as from a very moderate internal heat. The thermometer at a foot and a half below the top showed 66° only—and on the slope and something deeper in the body, 77°.

The oldest heap (No. 1,) was examined also on the 19th on the south side, and deeper in the same place tried last. The rotting had gone still lower, not more than a foot of the bottom now remaining quite unrotted. The general temperature was much lower, (which was very desirable,) except in the unrotted bottom. This part was at 74° near the junction with the more reduced body above, and 60° in a mass of wet straw, which had not even changed to a dark colour. The upper and more rotted part was, in different places, 72°, 80° and 94°—the last in the only visible fire-fanged spot, and where most vapour showed, upon digging in the mass.

From the heap commenced in the cow-yard, (No. 3,) vapour was now issuing at most parts of the top—and on thrusting a stick down two and a half feet through the loose and open materials, where most vapour came out, the heat was found to be 128°—and 106° at another place. The sloping sides slightly frozen, and at one foot and a half in, showed 50° only. The vapour from its want of odor, seemed still to carry off little or nothing except moisture. On the 21st, it issued still more abundantly from the top, and conveyed a scent of rotting vegetable mater—not ammoniacal. Temperature 124° at one foot and a half deep. This heap was not only too dry, but was certainly of very poor materials, and its rapid and violent fermentation was quite unexpected. Was it caused by the loose and open texture of the mass, and the quantity of air consequently enclosed? Threw a cover of a foot's thickness of litter (cut from the edges of the heap) over the top, to arrest and save the vapour. By thus cutting into the sides, it was found that fermentation was going on throughout. At different places, from five to seven feet within the first circumference, and from eighteen to twenty-four inches from the earth, the following various degrees of temperature were exhibited—60°, 65°, 85°, 76°, 91°, and 94°. The greatest heat of the sides was generally near the bottom. On the 22d, again covered the top with a coat of cold litter from the sides, as vapour was pouring out in greater quantity than before. Where most issued, a hole was opened for the thermometer to the depth of two feet, and the heat found to be 148°, the highest

yet known. Another place from which less issued was only 76°. The weather warm then, and for several days previous.

This day the first vapour was seen to rise from the mule-pen heap, (No. 2.) On January 24th, a heavy rain, which however did not make the litter of the farm-yard wet enough; but as no better state could be expected soon, we proceeded to heap it around the first part of No. 4. The heat of this on opening the top, was found by my overseer too hot to be borne by his hand at the depth of eighteen inches, and the top was then covered over with three inches of earth, which had not been done earlier, from the fear of its preventing fermentation in so poor a mass. This served to stop the visible escape of vapour, though not to check the fermetation too much (if at all,) as I found it on the 28th, at eighteen inches below the earth, to be 102°—and in another place, 90°. The heaping was stopped on the 28th, about one-fourth of the yard being still left. On this, where the litter was thickest, (about twenty inches,) it was fermenting as it lay, and vapour rose from it as it was dug into for heaping. Its temperature in different places, was 80°, 70°, 89°. The fermentation however was very unequal: some spots were fire-fanged, and others still dry and unchanged. The heap (built around the first work,) was raised generally to six and a half or seven feet, on a circular base, twenty-two yards across. The heap was fenced in, and fresh litter thrown over the uncovered part of the yard. Earth three inches thick was thrown over only a small part of the top to try the effect. The first of the latest heaping was already smoking (on the 28th,) in some place, and there the heat was found to be 90°.

30th. A steady slow rain nearly through the day. The out-spreading edges of No. 3 cut down and thrown upon the top. The weather generally warm latterly.

31st. The rain had served to lessen greatly the issuing of vapour from the heap No. 3. Proceeded to add the balance left on the yard to the same heap, raising the part now thrown up to eight feet high. The oldest central part had shown no vapour since being covered with earth, (on the 25,) but, on running a pole perpendicularly through the crust, and about eighteen inches lower, the heat was found to be 134°. In a part of the later heaping (of the 25th,) where most vapour issued, it was 105°—and where none was visible, only 66°. Slowly raining again.

February 1st. Finished heaping all the old litter to No. 3, which then occupied so large a portion of the yard, that there was not enough room left for the cattle, though they were stil confined to the surrounding space. The heap was thirty yards across the base, and seven and a half feet high when first built. Earth was thrown over the greater part of the top, (where not done before,) but very irregularly, as the labourers could not

see how to aim the casts from their shovels. Much increase of vapour before this operation.

2d. Found that the covering of earth was generally too thin. Though no vapour was visible (at 9 o'clock, A. M.) the loss of effluvia was evident by the earth being thawed and moist, and the surface of the lumps being coloured brownish, as if they had been soaked in the drainings from a dung heap. This was on earth dug and thrown on only twenty-four hours before. This appearance is enough to prove that more loss would take place without the covering of earth being used to arrest it. This deposit of solid matter is not found below, nor within the cover of earth, but on its new surface—and as much on the clods, as on the pulverised parts: therefore, it must first pass through, and then, (on meeting cold air and being condensed,) is precipitated on the earth, and probably fixed there by some chemical power. Where the earth has been laid on more thickly, it was generally slightly frozen, and the escape of vapour was limited to different spots where there was either no cover of earth, or where the materials below the cover were very course and open. More earth was thrown on all such places that could be reached, and the remainder that were too distant from the outside to be covered, were trodden, to make the surface more close.

The yard was again well covered with new litter. Two pigs were brought to the yard to get their living out of the grain left in the straw, and to mix the rich with the poor materials, by rooting about and separating the dung. This step was suggested by the appearance of the last heaped litter; and I believe that if such *labourers* had been employed from the beginning, the deep litter would (in time) have been sufficiently and equally rotted, without heaping, and no fire-fanging would have been produced. If such would be the case, heaping is unnecessary, except to hasten the fermentation of the manure for early use.

The stable-pen heap (No. 2,) had thrown out no visible vapour, except on parts of two days, and then but little. On January 31st, the second two very warm days, many plants sprung up on the top of this heap, from grain left from the food of the horses, and the seeds of weeds in the litter. As the heat is never sufficient to kill seeds in the outer six inches of a manure heap, and as it is also generally too dry there for them to sprout, (at the usual time of heaping in the spring,) it is not surprising that so much *cheat* and *spelt.* always spring up on manured land, when those weeds were plenty in the crop of wheat from which the straw for litter had been obtained. This same warm day first brought up the oats on the flat top of No. 1, they having before sprouted only on the sloping sides, where the cover of earth was thinner.

February 3d. Vapour was still issuing generally from No. 3, and conveying enriching matter, as appeared from the scent.

The earth last thrown on had not served to cover all the surface. If I had foreseen that so much earth would have been wanting, the labour of digging out the centre of the yard might have been saved, as a few years use in this way will lower it sufficiently.

9th. No escape of vapour visible for some days preceding, (at least as late as 9 o'clock, A. M.) except at one spot which had not been covered. But many places show by the brown colour, and sometimes by the moisture of the covering earth, that something is, or has been lately passing through. In warm weather, the steam is not made visible by condensation, and therefore its escape is less easy to detect. The temperature of different places one foot and a half below the top, was as follows: 112°, 96°, 73°, 155°, 98°, 90°, 150°, 98, 113°. The last named was the temperature of the oldest central part, and the preceding number (98°) shows the heat of a part of the new heaping, which on February 2d, had been well covered with earth, and pressed close by being trampled on. The hottest places were found where most effluvia appeared to have escaped—and where least warm, there was no mark of such loss. The average temperature of the whole would have been much lower than of these numbers—probably between 90° and 100°.

Carted away for use the balance of No. 1. The interior of the bulk seemed no more rotted than it had been two weeks though it was still warm. The heat had entirely subsided in all parts near the surface, and in some cases, as far as two feet inward. The temperature in different places was found to be 76°, 77°, 88°, 82, 88°, and 94—the two last being in the part least rotted. The cold part of the heap was as much reduced as I supposed desirable.

Began to carry out No. 2. This heap was still the wettest, and showed mouldiness in only a few spots. Its general temperature was low, and it was less rotted than No. 1, though the fermentation was still in progress. The hottest places found were 96° and 94°—elsewhere 80°. These measurements were made at two and a half feet within the bulk. Nearer the surface the heat became less. This heap, though much the richest, and not protected by any covering of earth, had passed through a more gentle fermentation, and seemed to have sustained less loss than either of the others.

March 2d. Dug into No. 3 for examination. The heat much abated, and much damage found from fire-fanging.

8th. Had been some days carting manure from No. 3 to the field intended for corn, and spreading and ploughing it in. The heap had sunk to about four feet: but much the greater part of its loss of height (as in all other cases of dunghills lightly heaped,) was from the mere subsidence and compression of the materials. The upper half seemed enough reduced by fermentation, (or was in a more than a half rotten state,) but the lower part was not much changed. Fire-fanged places were frequent, and

most so where the manure was best rotted. An empty barrel, open at both ends, had been set on the yard, and covered over by the oldest part of this heap, to try what effect would be produced by that bulk of air surrounded and enclosed by the fermenting manure. The barrel was reached this day, and the surrounding manure was found to be somewhat better rotted, and having more fire-fanged spots, than elsewhere. My thermometer having been broken, prevented any observations of temperature. In the first week of March, a large part of this heap had been moved to a distant part of the field, and there heaped again about six feet high. The earth was then too wet for the manure to be distributed over the field, and this moving and second heaping was done to lighten the future labour of carting, and also to try the effect of a second fermentation being excited. It recommenced, but very slowly; vapour did not show generally over the heap until the 18th of March, when a thin sprinkling of earth was thrown over part of the top. The vapour was still visible on the 28th, when the weather was very cold.

It should have been stated that the cattle were confined generally through the day to the pen, (except when driven to water,) during the depth of winter. After the clover began to spring, they were allowed to pick a little of it every day, and about the 20th of March, all were moved to another pen more convenient to their pasture. It was evident that their litter given since February 1st, was too dry and too poor of itself, and too little mixed with animal matter, to be fitted for spring use by heaping.

May 4th. Carting on the corn land (just ahead of the first horse-hoeing of the yount plants,) the manure drawn from No. 3, and heaped a second time. It was still quite warm, between 110° and 120°, as was supposed from the touch—and more rotten and better reduced than any of the other heaps—the lower half less rotted than the upper. Not much fire-fanging perceptible—though something of it seen in every part. The portion that had been slightly covered with earth was least rotten, but the difference was inconsiderable. Vapour still poured out where the heap was opened, and was the more easily observed as the weather was cold and damp.

No. 1—The ox-pen manure made 165 mule loads.
No. 2—The stable-pen, " 234 "
No. 3—The cow-pen, " 1365 "

The last quantity includes that heaped a second time in the field, 344 loads.

From all the observations which have been detailed, (I fear at tiresome length,) and from all the errors committed, I think the following inferences may be relied on.

1. The greatest error was not making the manure of No. 3 wet enough. This deficiency might have been easily prevented

by turning steams of rain water into the yard. The wetter the heap, provided it does not stand in a pool of water, the more gentle, regular, and the less wasteful will be the fermentation.

2. The heaps in every case were made too high, and the fermentation of the lower part of the mass retarded or prevented by the compression caused by the weight of the upper part.

3. The want of sufficient moisture instead of preventing fermentation, makes it more rapid and violent—and with sufficient access of air, produces fire-fanging, which destroys much of the value of manure so affected. The richer manures (as stable litter alone) are most liable to this disaster: but the very wet rich manure (No. 2,) heaped in cold weather suffered but little, and much less than the very poor but dryer and more open heap, No. 3.

4. Manure will ferment in our coldest weather, and therefore we lose time by waiting for the beginning of spring to construct our heaps, and cause damage by the increased violence of fermentation.

5. We need not fear, by using the greatest quantity of vegetable matter to make our manure too poor to ferment properly and in good time.

6. If enough water had been introduced previously, No. 3 might have been heaped by January 1st—and the second littering also before the winter was over.

7. The fermentation of all the heaps would have been more complete, and probably without farther waste, if they had been left undisturbed until just before planting corn. But this was one of the many cases in which convenience directed more than reasoning. If the carrying out had been delayed until the manures were in the best state for use, the occurrence of wet weather and the pressure of other farm labours, might have prevented the application being made early enough for the crop of corn.

The weather through the winter was generally milder than usual, but there were three short excessively cold spells. The last of these was after the beginning of planting corn, and on the morning of March 30th, the earth was too hard frozen to plough.

The effects on manures of the important and mysterious process of fermentation, will never be understood until chemists shall undertake the investigation—and not in the study and laboratory altogether, but also in stables and amidst dunghills. I fear that we shall never see one make the attempt in any way—though the investigation offers and promises results that would be most honourable to the discoverer, and of incalculable value to agriculture, and indeed to the human race. Chemists neglect agricultural investigations, and seem to consider them as unworthy of scientific research. Yet, if a discovery was announced of some new metal, or new acid, found so rarely and in such

small quantities, that the whole globe would never furnish a pound together, and of which no man could conceive any possible use—every chemist would feel interested in the subject, and more would be done for its investigation than agriculture has ever owed to their whole body. J. B.

ART. II.—*On the Cultivation of the Potato, with a view to obtaining greatly increased Crops; by the Author of "The Domestic Gardener's Manual."*

[FROM THE BRITISH FARMER'S MAGAZINE.]

Above two hundred and forty years have elapsed since the introduction of the potato into the British isles. During that period it has been gradually making its way in the favour of the inhabitants; but its progress for a long time was very limited. So slight, indeed, was the estimation in which it was held, even after the era of the revolution, that we find the celebrated Evelyn, in the year 1699, giving directions to plant potatoes in the worst grounds. "Take them up," he says, "in November, for winter spending—there will enough remain for a stock, though they be ever so exactly gathered."

The potato began, however, to be extensively cultivated about the middle of the last century; and now it is grown in every farm and cottage garden, almost without exception.

If experience seemed to have proved, beyond a doubt, that this root may be deemed one of the most important vegetable productions; if, in the face of every assertion to the contrary, it be found a very valuable, and, generally speaking, a most salubrious article* of diet; and admirably adapted to supply nutritious food for animals and poultry; it becomes a matter of serious interest to determine with certainty, that mode of culture which shall at all times, and in all situations, tend to produce the heaviest crops, and of the finest quality.

* It has been argued that the potato, at least under certain conditions, possesses a slightly poisonous quality. The idea may have originated in the botanic character of the plant: in fact, it is one of the family of the night shade—the *solanum tuberosum* of Linnæus, and of the old natural order *luridæ*, which included plants whose appearance was described as being "dusky, dismal, and gloomy." The genus or family *solanum*, is the type of that numerous tribe or order in the *natural* system, *soleneæ*, many of whose members exhibit great beauty of appearance, and possess very useful properties.

The common mode of planting and cultivating the potato is known to every cottager and farming man; but that philosophic method which has recently been productive of enormous returns, may, perhaps, be referred chiefly, if not entirely, to the scientific President of the Horticultural Society. This method it is my object to describe, through the medium of your pages; but before I enter upon the detail of Mr. Knight's directions, I think it a duty to request the reader's attention to a few important results, the particulars of which have been stated to me in letters lately received from that gentleman. As facts, and very recent ones, they are peculiarly interesting, not only as they decisively show what may be, and has been effected during the late season, but also because they prove, to a demonstration, that science and hypothesis may go hand in hand with practice; and that, when the latter is founded upon the former, it loses altogether its empirical character, and becomes established upon the most unassailable basis.

Mr. Knight has observed, that he planted his potatoes upon a soil *naturally poor*, and very shallow, upon a rock full of fissures, *giving no more manure than is usually given to a crop of turnips;* the manure was mixed up with the soil, and not thrown into the drills at the time of planting. The plants suffered from drought during a part of the year; nevertheless, he had very good crops from many varieties. These varieties he had himself originated from seed, and they possess the important quality of *scarcely producing any blossoms;* and, therefore, the vital powers of the plant are entirely employed in the production and support of those tuberous processes—the potatoes—which are the sole object of the cultivator. The produce of two of the sorts is particularly stated to me, and is as follows: of the one, twenty-three tons, two hundred weight, seventy-six pounds; and the other, twenty tons, two hundred weight, one hundred and one pounds, per acre. Of four other varieties he observes, "the produce exceeded twenty tons each per acre, all of good quality." If the reader will reduce these weights to pounds, he will find them, (reckoning the yield at twenty tons only per acre) to amount to five hundred and sixty bushels, each of eighty pounds weight.

In the winter of 1831, I received a packet from Mr. Knight, inclosing several specimen potatoes raised by him. For the convenience of carriage, these were under the medium size, weighing about four ounces each; they were, however, perfect in form and growth. Eight of them were selected, and planted in a row, each widely apart one from the other. From these eight tubers, whose total weight was barely two pounds, I obtained a produce of one hundred and fifty-six potatoes, weighing, in all, sixty-nine pounds. Some roots yielded more than

others; one was peculiarly prolific—it furnished eighteen pounds of potatoes, six of the largest of which weighed ten pounds.

Having thus adduced a few general facts it remains to point out the mode of operation by which such large results may be obtained.

One of the chief, if not the primary, agents in effecting vegetable developement and maturity, is light. Deprive a plant of *that*, and you either paralyze the operation of its vital principle, or induce imperfect and diseased action. The leaves of vegetables are the media upon which light acts; and, therefore, it should be the object of the gardener so to arrange his crops, that the utmost breadth of their foliage may be exposed to the full influence of the solar rays. Hence, the rows of potatoes ought *to point north and south;* for, in the first place, plants so exposed, command the greatest breadth and duration of light; and in the second, the sun at the time of his highest meridian altitude—that is, at the hour of noon,—shines directly along the extent of the rows; his light is also most equally distributed upon the whole foliage as he approaches to, and recedes from the meridian. The perpendicularity of growth, which is of considerable importance to the complete success of the crop, is less likely to be disturbed by this mode of arrangement, than by any other that has heretofore been employed. It is generally the practice to plant small potatoes, or sets of larger tubers, cut with one or two eyes to each. These sets are planted in rows from sixteen to twenty inches asunder, and the sets about half that distance, or nine inches apart, without any consideration being had to the aspect or direction of the rows. As the stems advance in growth they are very liable to fall over, and become entangled one with another, thus intercepting the solar light, which then acts unequally upon the disorderly masses of foliage. Hence the crops become very unequal in point of bulk and weight.

Mr. Knight's philosophical directions lead to a very different result. He recommends the planting of whole potatoes, and those only which are of fine medium size—none to be of less weight than four ounces; and he often prefers those which weigh six or eight ounces. The earlier sorts, and, indeed, all which seldom attain a greater height than two feet, are to be planted about four or five inches apart in the rows, centre from centre, the crown ends upward; the rows to be from two feet six inches to three feet asunder. The late potatoes, which produce a haulm above three feet in height, are to be placed five or six inces apart, centre from centre, in rows four or five feet asunder.

When potatoes are thus planted in rows pointing north and south, the utmost energy of the light will be exerted, not only upon the foliage of the plant, but upon the surface of the intervening spaces of ground. If we suppose that the main crops will be planted at the latter end of March, and during the month

of April, the sun's meridianal altitude will be advancing daily, for at least nine weeks; and during that period, the developement and growth of the stem and leaves will be in a state of rapid progress. After the turn of days, and when the plants have attained their full growth, the sun will continue to exert its most powerful influence. Should the ground be of a proper texture and quality, the plants will stand erect, and the maturing process will proceed without interruption; and after favourable summers, wherein there have been regular and moderate supplies of rain—particularly during May and June; with a prevalence, however, of bright sunshine, the crops of potatoes will be regular, the tubers generally of a medium size, and the quality mealy, and altogether superior. If the soil be a strong mellow loam, enriched with much manure, the haulm will, in all probability, grow too rank, and finally fall over; nevertheless, the large spaces between the rows will greatly remedy this evil, for the sun's beams will act upon one surface at the least, and the matting and other injurious consequences resulting from close drilling will be prevented or obviated. I cannot refrain, in this place, from correcting an erroneous opinion, which almost universally prevails. We hear every where of potato plants running away to haulm, and thus expending their vital energy upon useless stem and foliage, instead of employing it in the production of tuberous roots. Now this remark is wholly opposed to philosophical fact, for invariably the strongest and heaviest bulk of potatoes is found attached to the most luxuriant haulm. The evil of over luxuriance is not to be referred to the paucity of tuberous product, for that is always great; it is a consequence of an over-rich soil, which causes the haulm to grow so tall as to fall over, become entangled, and thus to lose the maturing influence of light; hence, such haulm seldom ripens in due time, it remains green even in December; and the tubers, though large, numerous and heavy, are immature, void of mealiness, and vapid in flavour.

A fact of great importance to the growers of potatoes remains to be noticed. The *outside rows*, and all *single rows*, will be found to produce far greater crops than any of the interior rows of a plot in the garden or field. This depends upon a variety of causes, the chief of which is, the more perfect exposure of the foliage to the agency of air and light. Mr. Knight assures me, that he obtained from one outside row of an early seedling variety of the preceeding year, which was two feet six inches exterior of an adjoining row, "*a produce equivalent to more than fifty-eight tons per acre.* No conclusions," he adds, "can be drawn from the amount of produce of an external row. I mention it only to show *the enormous influence of light.*"

In this philosophical remark I cordially acquiesce, because experience has established its truth to my own satisfaction. I

therefore earnestly recommend every cultivator who has the opportunity of cropping upon long detached slips, in airy, open situations, to make the experiment of close planting in single rows, either whole potatoes, or well cut sets from very large potatoes, each to contain two eyes at the least. These sets should be taken from the crown end, or middle of the tuber, and not from the lower or root end; as I have found the latter to be comparatively unproductive. Sets may be planted at still less distances in the rows than whole tubers; and although the preference ought in all cases to be given to a southern direction, where such can be conveniently given, still, for absolutely single rows, it is not indispensably required, because air and light will act on each side of the stem and foliage, and there will be no intervening shadow.

The *soil* ought to be sandy and light, though moderately rich; that is, if fine mealy and dry potatoes be required. It should not by any means be glutted with manure, and need not be deep. I have found no particular advantage in trenching for this crop; in fact, I am credibly informed by an observant gentleman, who has travelled extensively, that in North-America, the finest potatoes are produced in extraordinary quantities upon grass meadows, by simply turning up the turf, inserting the potatoes, and reversing the turf by placing the grass surface downward upon them.

With respect to the properties of this vegetable, and the purposes to which it may be applied, the following observations of an eminent physician may not be deemed inappropriate. I extract them from the "Pharmacologia" of Dr. Pare:—

"Potatoes are found to produce

"First—Cottony flax from the stalk.

"Second—Sugar from the root.

"Third—Potass by combustion.

"Fourth—Vinegar from the apples.

"Fifth—Soap, or a substitute for bleaching, from the tubercles.

"And finally—When cooked by steam, the most farinaceous and economical of all vegetable food."

It is also known that much farina, or rather *amylum*, or starch, is yielded by grinding and washing the pulpy mass. My experiments in 1828 led me to ascertain, that a fine mealy sort yielded from one-eighth to one-seventh of the total weight of the potatoes. This starch may be employed as a substitute for that made from wheat; and as an article of diet, prepared as Indian arrow-root. It can also be introduced in making bread, though there is some difficulty in the manipulation. As food for all cattle of the farm—horses, cows, pigs, and likewise for poultry—potatoes are all but invaluable. Every creature appears to relish them; particularly when they are steamed or carefully boiled. It would be well worth the intelligent farmer's while to pay great

attention to the use and effects of potatoes, raw and boiled. It is asserted that a cow may safely eat them in a raw state to the extent of, perhaps, fifty pounds per day, provided the eyes have broken and began to shoot. Whenever they be given raw, however, they should be chopped into pieces to prevent accidents. The utility of raw potatoes is, however, doubted by many, and therefore, the experiment requires close observation; perhaps straw, hay, and chaff, might be employed as a very proper adjunct, with a few ounces of salt, added to each feed. Whenever steaming in the large way can be profitably employed, it must be an advantage for pigs and poultry particularly; and in all cases it would greatly tend to prevent the possibility of the danger of suffocation, which has been known to result from the hurry and greediness with which cattle devour the raw roots.

I am, Sir, yours, respectfully,

G. I. T.

December 18th, 1832.

Art. III.—*On the Culture of Roses; by* T. Rivers, Jun.

[The following observations on the Culture of Roses, we extract from a notice of Messrs. T. Rivers & Sons' Catalogue of Roses, contained in the Gardner's Magazine.]—*Ed. So. Agr.*

The following very judicious observations on the culture of roses are placed at the end of the lists. They contain the essence of all that can be said on the subject:—

"The rose, perhaps, more than any other ornamental shrub, requires constant culture to make it bloom in perfection, unless in the most favourable rose soils, which, in my opinion, is a rich cool loam. Roses require to be removed, and to have their roots trimmed, every third year: when taken up, these roots will be found to have lost most of their fibres: but, naked as they are, if they are then trimmed, the branches thinned and shortened, and plenty of well-rotted manure mixed with the soil they are planted in, the plants will be quite renovated, and bloom as fine, and often finer, than young plants. This treatment, perhaps, is most applicable to standard roses; with dwarfs the trouble is too much, unless with the choicest sorts, as they are sold at such low prices, that it would be cheaper to make a new plantation. In very clayey cold soils, the finest compost possible for roses is

well-rotted dung and common pit sand *(not road sand,)* equal parts. When standards are removed, they ought to have their heads thinned, and shoots shortened *early* in spring. A mistaken notion, which I often find current, is, that they ought to "push," *i. e.* begin to shoot before the branches are shortened: this has sealed the doom of very many standard roses. I have an idea that standard China roses, of the most choice varieties, with stems from three to four feet, might be made highly ornamental summer plants; they are too tender to endure the ordinary severity of our winters *as standards*, but, if taken up every autumn, put into large pots, and placed in a dry shed, they would remove into their summer quarters in the spring with perfect safety, and bloom much finer than if exposed during winter, and their shoots injured by the severity of the weather. The varieties of *Rosa* indica odoràta bloom exceedingly well in this manner, as do all the strong-growing varieties of China roses. *Rosa Grevíllii* and multiflòra also form curious objects, and bloom very freely, when grown as standards. The hardy climbing roses, and several of the climbing China roses [marked *h* in the catalogue,] form fine objects when trained "*en pyramide*, *i. e.* in the French manner of trainining pear trees; but when trained in this manner, as climbing roses do not form a stem strong enough to support themselves, the strong central shoots must be tied to iron or wooden stakes, and the side shoots from them shortened every season: in this manner, with proper culture, they will form pillars of roses, from 6 feet to 10 feet in height.

T. RIVERS, Jun."

ART. V.—*Bees; by* LAWTON HARMON, Jun.

[FROM THE GENESEE FARMER.]

"Wheatland, July 29, 1833.

Mr. Goodsell,—If you should consider the following plain communication of facts, worthy of a place in your paper, you are at liberty to insert it, hoping that it may prompt some other person to convert a useless garret into a source of amusement and profit.

Much has been written of late respecting bees. Two years since I learned that bees might be kept to advantage in a garret.

At that time I was building a stone house, two stories high, and directed the mason to leave a hole in the end eight inches wide and one and a half high: the bottom level with the garret floor, having determined to give this method a fair trial. I delayed putting in the bees until I had a swarm last year. The swarm was first put into a hive twenty inches deep, and ten in diameter. I placed this hive on the floor six inches from the wall, and about the same distance from the chimney opposite the hole left in the wall. They nearly filled the hive last year, and this season they have not only completed the filling of the hive, but have filled the space between the hive and the wall, and also between the chimney and hive and are now building on the outside of the hive opposite the chimney, and have raised the comb several inches above the hive. Although the bees have increased in numbers to that extent, that they cover the wall for two feet above the hive, yet they continue to work well, and there is no appearance of their being disposed to swarm. I have one inconvenience with them, if a door or window is open at the end of the house they sometimes enter by mistake where they often remain, as Ulmus says, "butting their heads against the window," until they fall down and die if they are not turned out of doors. I have given the bees the whole of the garret which is twenty-two by thirty-six feet, no light is admitted except by the hole where they enter, which hole I fear may prove too small for them, hereafter should they continue to continue to increase, as it now appears to be filled with bees passing in and out, but none are seen lying about the outlets as is the case when the common hive is used.

LAWSON HARMON, Jun.

Art. IV.—*A New Mode of Rearing Asparagus.*

[FROM THE FARMER'S REGISTER.]

"June 17, 1833.

Mr. Editor,—Yours of 31st ultimo was received, and with great pleasure I now comply with your request to furnish you with my plan for making asparagus, which you are at liberty to publish in any form you may think suitable, provided you do not mention my name.

The asparagus seed should be sown from the middle of March to the last of April, in a rich spot, (not too much exposed to the

mid-day sun,) one inch deep, and the seed one inch apart; after they come up, to be kept clear of grass and weeds during the summer, by hand weeding; to be dug up the next fall or spring—(I prefer the spring, as the roots do not grow during the winter, if set out in the fall, and are liable to be killed by a severe winter) and set in beds prepared as follows: dig out the size of the beds nine inches deep—cover the bottom three inches deep with rich marl, (which has been my practice,) though I believe that oyster shells half burned will be as good, as it is intended as a lasting heating manure to protect the roots in winter, and force the vegetable early in the spring: then put three inches deep of coarse stable manure, then three inches of rich earth. This brings the beds on a level with the surface of the earth. Next lay off the beds in rows eighteen by twelve inches apart, and put a single eye or spire in each spot where the lines intersect, and cover them three inches deep with rich earth. Plank the sides of the beds, as this prevents grass and other roots from running into the beds, and also keeps the outside roots from being exposed, by the sides of the beds washing away. The beds should be kept clean by hand weeding, and all the earth and manure used in making them, should be perfectly free from grass roots and noxious weeds. In the fall of the year after the seeds have matured, cut the tops off close to the beds; (being careful that not a single seed is left to vegetate on the beds,) as they have already as many roots as the space they occupy should contain, and if additional roots are not suffered to form from year to year from the falling of the seed every fall, the beds will soon be so much clustered with roots that the vegetable must degenerate, at least in size and length, as the new roots form near, or on the surface. Some prevent this by burning, but I think the best way is to pick them off by hand, before the ball that contains the seed breaks. You then top dress the beds with coarse stable manure, let it lie on all winter, and in the following spring rake off the coarsest part, and fork in the remainder, being careful that the fork does not touch the roots. Pursue this course two falls, and early in the third spring, before the beds are forked up, put on two inches of light well rotted manure—fork it in with the stable manure, then put on from three to four inches deep of clean sand from the river shore, and you will cut in the month of April the best vegetable we have in Virginia. I would not give my beds for the balance of my garden. I think there is much in the kind of seed. I have a gallon, and if you will say how they must be conveyed, I will with pleasure send you some. I obtained my seed from New-York; they were marked "giant asparagus."

The cover of sand is important on several accounts; its being a great absorber of heat and moisture, so soon as the vegetable gets through the soil, it is hastily thrown through the sand to the

surface in a bleached tender state, and the cutting from day to day is more uniformly of the same tender delicious vegetable. The sand also prevents grass from growing on the beds, which obviates the necessity of so much hand weeding during the season for cutting, by which the beds frequently become trampled, and the vegetable that is about to come through the surface mashed down, which not only destroys the spires that are so trampled on by the gardener in the process of hand weeding, but (I think) injures the root. The sand should be laid in the alleys between the beds, in the fall, when the beds are about to receive the top-dressing of stable litter to keep them warm through the winter; and when the sand is about to be replaced in the spring, it should be passed through a seive of such size as will not let the balls (that contain the seed) pass through. This will be another means of preventing the seed from vegetating on the beds. There is a practice very prevalent with gardeners to plant lettuce, radishes, and other early vegetables on the beds; this should never be done, and particularly with radishes, as they have a long root that extends to the roots of the asparagus, and must seriously interfere with them. I frequently cut asparagus from three to five and a half, and once I cut a spire six inches in circumference, and from five to eight inches long; it could have been cut longer, but it is never tender near the root.

We have complied with the command of our esteemed correspondent by withholding from the foregoing letter a signature, than which no better can be offered as authority for any statement of facts. But in any form that may be most agreeable to himself, we shall be always pleased to receive and pub- any result of his practical and successful operations in improving and cultivating the soil.—*Ed. Far. Reg.*

Art. VI.—*Upon Exact and Experimental Agriculture.*

[FROM THE NORTHERN FARMER.]

My friends, the Farmers of Essex Essex County, will not be offended if I presume to urge them upon one or two points, which I deem of great importance to their agricultural improvements; and they will pardon a freedom and earnestness, which they know spring wholly from an honest pride in the honour, and a strong desire for the success of their intelligent and enterprising association. Though removed from their immediate vicinity, I am not the less interested in whatever concerns a county, endeared as the residence of my remote ancestry, who among the

earliest emigrants made it their resting place, and, with their descendants for years, participated in its privileges and blessings.

The first matter which I suggest to you is exactness in your agriculture. The neglect of this is almost universal, and to its great disgrace may be said to be characteristical of the farming profession. In my intimate intercourse with farmers for years, nothing has been more remarkable, and nothing in many cases more gratifying and provoking, than this want of exactness. They measure nothing; they weigh nothing. It is all guess work with them in every thing. Ask them how much land they till or mow?—they do not know. How much corn, rye, oats, barley, how many potatoes, they raised?—they do not measure them. How much hay they mowed?—they guess about so many loads. How much their corn or their potatoes yielded?—why, they judged about so and so; but this judgment is altogether the merest guess work. How much manure they put upon an acre?—why, they mean to put on, commonly, for there are always qualifications enough to save their veracity, about six, or eight, or ten loads, as the case may be; but what they call a load is with themselves, and must be with others, matter of pure conjecture. How much seed they sow to an acre?—why, as near as they can guess, about so much. How much will a favourite cow yield?—why, she gives over a pailful; but what is the size of the pail, whether six, or eight, or ten quarts, or whether wine quarts or beer quarts, which makes a difference of at least one-fifth; or how much over, whether one quart or four quarts, are points, which it never occurs to them are important to be defined, or at least pretty exactly approximated, before they presume to demand the confidence of others, or indeed to place confidence themselves in their own statements.

Now I submit to you, my brother farmers, whether this is not an unvarnished statement of facts. Ought it to be so? Is such looseness or neglect admissable in any other of the business professions?

But what, you will ask, is the advantage of such exactness? We answer, very great. There is a satisfaction in knowing what we do. If we do not, in fact, do so well as we imagine, let us not go on deceiving ourselves, but ascertain the occasions of the failure. If we, in fact, do better than we imagine, let us enjoy the pleasure of conscious improvement and let it furnish a stimulus to greater efforts.

Exactness is important in the next place, in order that a man should compare the value of his crops with the expenses of cultivation; and of each crop with its particular expense: that he may determine how far he is a gainer or a loser by his operations; in what respects one crop may have the advantages over another; that he may determine which will best repay his care and labour. But he can never do this, and he is liable to the

grossest mistakes, both in judgment and practice, with out exact observation and measurement.

Exactness is important in the next place to the proper disposal of his crops. How can a farmer well calculate what he shall do with his crops, unless he first ascertains what he has? If he overrates them, he is liable to overstock his farm, and either be compelled to pinch his cattle, by which in the end he is sure to lose, or to purchase fodder, which few men can afford to do; or if he underrates them, not keep stock enough, and with the feeling of abundance be very likely to use his prudence prodigally and wastefully, and so fail of the advantages within his reach. Exactness is in the next place important to a man's character and usefulness. Agricultural operations approach so nearly to what may be called a creative power, that no class of people are more liable to have the organ of self-esteem powerfully excited than the farmers. Few men, therefore, are more disposed to boast of what they have done, and especially how much they have done. Some of their statements are so extravagant that they are made at the expense of all respect either for their judgment, or knowledge, or varacity. The fact is, they do not mean to impose on others, but they deceive themselves. It is all guess work with them. The effects of such misstatements are often very bad; and equally pernicious whether the result of mistake or design. The inexperienced and confiding are led into gross miscalculations by them. Now, a respectable man ought to have so much regard to his own honour as that, when he makes a statement, he may be sure it is founded in strict truth; but of this he never can be sure, unless he is in the habit of exact calculation and measurement; and no certain progress can be made in the science of agriculture without this exactness. Agriculture must be considered as one of the exact sciences; and we shall never know whether our progress in it, is forward or retrograde, until we have done with guessing. I have myself been so frequently and egregiously deceived by the misstatements of men, who certainly did not mean to deceive, that I have long since determined to believe no statement, which a man has not verified by actual and exact observation, and then I am as willing to give my confidence as any man. I could give some of the instances to which I refer, but some of my friends, who are accustomed to draw a long bow, would recognize the likeness, and I should be sorry to give them as much pain as they have occasioned me disappointment.

But, you say, it is troublesome to be exact. The trouble is not great where the habit is once formed; and is very much more than compensated by the satisfaction experienced in doing it. Land can be measured with considerable correctness without the trouble of a surveyor's instruments. The time occupied in planting, cultivating and gathering a crop can easily be taken

account of. The manure cart can be measured, and then an account kept of the number of loads carried out. The seed can easily be measured. All vegetable crops, all grain crops are very quickly measured. Hay can easily be estimated in the cock or in the load, and the number of loads determined; or the size of a mow ascertained, and the amount of hay contained in it very nearly calculated. Then again, the amount of food consumed by different animals for a week at a time, at different seasons, can be ascertained with very little trouble; and a calculation of the whole amount required for them to be made from these premises. The quality of the milk of a cow can easily be decided by setting a portion of it for cream in a glass vessel, and comparing it with others in the same way and under the same circumstances; or the milk of a particular animal can be placed by itself for a period of time and her actual produce determined. All dairy produce is easily ascertained. The debt and credit sides of your sheep-fold too, and of your pig-sty, where let me tell you exactness is specially important, are easily kept. All these things ought to be done; and, I say again, that the satisfaction and advantages of doing these would greatly overbalance the trouble and care. Ask an intelligent and enterprizing manufacturer about his concerns. He can tell you, if he deserves that character, how much power of water he has, even to an inch; how many spindles he can carry; how many pounds of wool or cotton he can work up; how much fuel, how much oil, how much dye-stuff he requires; how many pounds of wool or of cotton are needed to make a yard cloth to a certain degree of firmness; how much of human labour he can employ to advantage; and at what rate exactly he can afford to sell his cloth in order to get a living profit. Now is there any reason in the world, why a farmer should not be, as far as possible, as exact and calculating in his concerns as the manufacturer? Would he not find an equal advantage in it? And is not the want of this exactness and care one of the great reasons, why farmers in too many cases find their farms either an unprofitable or a losing concern, and in point of improvement are just where their fathers were a century ago? Keep a journal therefore; a dairy. Keep an account of every field, and every crop. Ascertain what it costs; what it comes to; what you have done for it, and what you do with it. Keep an account in some form with every domestic animal on your place. See whether they pay or how they can be made to pay for their living; whether you keep them for profit or pleasure. Do not be ashamed of mistakes and false judgments and miscalculations, unless you voluntarily run into them a second and a third time; because no human judgment is infallible, and the wisest are ever liable to err; and in the first place take care not to impose upon yourself, and in the next place, when you undertake to tell your neighbours

what you have done, be sure you are able to speak the truth, the whole truth, and nothing but the truth.

(*To be continued.*)

PART III.

MISCELLANEOUS INTELLIGENCE.

Great Corn Race for one thousand dollars, over the Talbot and Dorchester course, in 1834.

This is the sort of sport we like—it is really to our taste. In such contests some one may win the prize, but we are confident that, unlike betters on horse races, the losers will all be gainers in the long run. Speed and bottom, say we, to all the competitors, and may they be rewarded for their singular choice in amusements, as was Midas, of old, for his preference in the musical contests of a brace of windy gods—may they each acquire not merely a pair, but a multitude of *long ears*. By the way, we hope as the Cambridge Chronicle suggests, that it shall be made a condition of the race, that each competitor furnish a statement of his method of cultivation, variety of seed used, &c. &c. for the benefit of the public.

One Thousand Dollars!—Agricultural Sweepstake, for Talbot and Dorchester Counties.—A sweepstake proposed to the Agriculturists of Talbot and Dorchester counties, on one continuous acre, "a parallelogram," of "Indian corn," shelled, to be grown in the ensuing season.

Measurement of land, and corn shelled, to be attested on oath. Twenty dollars entrance money to be paid by each competitor, on or before the first day of March, into the hands of one of the editors of the Easton or Cambridge newspapers, of which due notice shall be given, on or before said day, to Martin Goldsborough, of Talbot, or Joseph E. Muse, of Dorchester.

The stake entered shall not be withdrawn unless six shall not have entered, by the said first day of March; in which case, all shall be void—nor shall the number exceed fifty.—*Amer. Far.*

Rice Mill at South Boston.—This is an entire new invention, by some of our Yankee mechanics at Northampton, in this State; Strong, Moody & Co. It is remarkable that our Carolina friends, should be under obligations to us, for the best means of cleansing Cotton and also Rice. We are induced to say something on this subject, in consequence of a visit to these mills which are just put in operation by John Prince, Esq. who has purchased the exclusive privilege of using them in this section of the country.

They appear very effective machines for doing the business of hulling and cleansing the rice in a more perfect manner, than any heretofore knowu. As the method used in all countries is by pounding, which breaks much of the grain, and subjects it to become floury, and makes it very liable to insects in warm weather. The process of cleansing the inner coat is by Carding Ma-

chines in the shape of mill-stones. And the other processes of bolting, brushing and winnowing clean and polish it in the most perfect manner, and make nearly the whole of it head rice—consequently we believe it will keep much better and be more valuable.

We know that in summer it is very difficult to obtain good rice, free from weevil and other insects, being uncertain how long it has been beat out. Here we can go the mills and buy it from the hopper. We understand it is Mr. Prince's intention to grind some in fine flour, having a set of Burr Stones for that purpose.

This article more particularly since the appearance of the cholera has become more in-use than formerly; the physicians recommending it for general use, as a most wholesome food.

The machinery is in considerable variety, and appears ingenious and very perfect, is carried by a neat and powerful steam engine of 20 horse power, made by Mr. Holmes Hinckley, of Boston. A visit to this place, we think, will gratify any person desirous of seeing useful inventions. Mr. Prince's present establishment is expected to clean 4 and 500 bushels of the rough rice or paddy per day—and can, if necessary, be much increased,

The outter coat or hull which is in large proportion, he expects will answer well for making wrapping paper—it is now under process for that object, and can be afforded at a very low price.—*N. E. Far.*

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Feeding Fowls in Winter to increase their laying of Eggs.—Mr. Editor,—In a late number of your 5th vol. you gave some interesting information on feeding fowls to increase their eggs in winter. I am a small farmer, having only about a dozen acres, and am trying to support my family better than my next neighbour, whose family consists of the same number as mine, but whose farm embraces upwards of 200 acres. I have near 100 hens and 14 cocks—have been feeding them with stimulating food—buckwheat, &c. mixed with chopped leek-tops and other heating vegetables. I now obtain twenty-five eggs per day. Yours, &c. A Small Farmer.—*N. Y. Far.*

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Simple Apparatus for Preparing Silk Cocoons for Reeling.—Mr. Brewer's suggestion about reeling silk, is an improvement on the usual practice, but I think it is yet susceptible of amendment. Make a box 12 inches square 2½ feet long, of inch boards, put on a bottom and bore 4 or 6 holes near the edges, on the inside lay a square board smaller than the bottom by an inch all round the sides; cover the spaces between the sides and false bottom with tin, with small holes punched like a lanthern, then put on the cover with hinges, which cover should be forced with a small gimblet in squares of one inch; take a coffee pot, put in it half a gallon of whiskey, or any cheap proof spirits; set the coffee pot on some live coals and the spirits will soon boil, and the steam will pass off through the spout, and may be easily led into the bottom of the wooden box. Let the box be filled with cocoons, and the hot steam thrown on them; it will soon kill all the millers, and dissolve all the gluey matter of the cocoons, which will reel much better than from the water bath. The steam of the spirits is a much greater solvent than water; the holes in the cover will lead the steam through the box, and the tin and holes at the bottom will allow any water to escape, which may be condensed during the operation. I hope yet to see the silk culture and reeling very extensively attended to in our country, and think much improvements will be made after a little experience.

Yours, &c. R. M. W.

Potter, July 4th, 1833.—N. Y. Far.

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Low Training of Grapes.—There appears to be very considerable concurrent testimony in favour of low training to prevent mildew; or rather those grapes found growing very near the ground are found to be less liable to this malady. On the supposition that mildew is a parasitic plant, and that moisture is favourable to its germination and increase, the inquiry arises, are these low grapes less moistened by dews and rains than those that are higher? In

ordinary seasons we think they are. They are protected from dews, mists, and light rains, by the over-incumbent leaves and branches. Although they are not as early dried by the rays of the morning sun, yet the moisture is more gradually evaporated, and they receive more radiated heat from the earth. After all, the vine culture, particularly the exotic, is in its infancy in our country.—*N. Y Far.*

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Ashes applied to Pear Trees.—Respected Sir,—I have enclosed inclosed in a small package a sample of pears, should you deem them worthy of acceptance; although the name and species is not known with us.

About three years since, I commenced digging around and removing the earth and tough sward from the body of the tree; filling up with fresh ashes, applying it in fall and winter, about a bushel and a half yearly, since which the fruit has assumed a new colour, become much larger, as you can perceive by the one enclosed in white paper which is about the average size of their former growth. The quantity of fruit the tree now yields is more than double that of former years; all which can be satisfactorily attested.

Yours, &c. most respectfully, JOHN S. CHAMPNEY.

Abington, Oct. 10, 1833.—*N. E. Far.*

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Potatoes manured with Pine Boughs.—A farmer in New-Jersey relates to us the following experiment: having a large number of young pine trees growing near his potato grounds, he gathered a sufficient quantity of the boughs to form a considerable covering to a row of potatoes which he was planting in drills. In the drill on one side of this he used lime from manure, and in one on the other he put in marl. They were all covered with earth in the same manner, and received the same culture. On digging them, those that were manured with the pine were twice as large as the others, and double in quantity.

Planters in the Southern States estimate pine leaves, gathered early, as among the best of manures.—*N. Y. Far.*

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Large Sweet Potato.—Hurrah for Jackson County!—Farmers beat this who can.—We have just been politely presented, by our friend Dr. Singleton, of Jackson County, with a sweet potato of the yam species, measuring *twenty-seven and a half inches* in circumference, and weighing *nine and a half pounds!* It may be seen at this office. We think the Doctor may safely challenge competition in this branch of agriculture. The potato was raised from a slip in the usual manner, and grew upon his plantation.—*Sou. Ban.*

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To Prevent Horses from breaking Bridles.—We have heard farmers speak favourably of the following method of managing horses, recommended by the Farmer's Register.

While writing this letter, my attention was arrested by a person calling to another to run and prevent a horse from breaking his bridle, that he had been just tied by. I will, therefore, state how I broke a valuable mare from that habit a few years ago. I came home one day, and tied her, and had scarcely reached my door before she broke a new bridle into three parts, and ran off. I ordered her to be brought back, and after some reflection, I cut a piece of leather about four inches long, and about as wide as the head-stall, and drove two rows of small nails through: while this was fixing, I ordered a small pad to be made, about the size of the leather, and filled it with wool: I then pressed the points of the nails into the pad, and put the leather under the head-stall, and walked off. She gave a sudden jerk to clear herself from the bridle, which forced the nails through the pad into her head, after which she made one or two slight efforts, and stood still. I then took a horsewhip and gave her several cuts, but she would not break away: she appeared more afraid of the nails coming in contact with her head than she was of the whip.

After this, when I tied her for two or three times, I slipped the pad and leather under the head-stall, which effectually broke her; and since, I have broke another in the same way. Both of these were young beginners; but I imagine that old offenders can be broken in the same way. This can be used to make a horse lead into a place, or pass a fence or ditch, which otherwise he would be unwilling to do.—*N. Y. Far.*

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Dahlias.—This autumnal flower, lately introduced and made a favourite here, has become so much so with English horticulturists, that they have begun to form societies for the sole purpose of cultivating them. On a late occasion, a party of twenty agreed to frank another party to a Burgundy dinner, if they did not produce the first Dahlias. The bet was lost, the dinner eaten, and the Burgundy decanted. The winners, however, subscribed a sovereign each, to be given in premiums at the next year's exhibition.—*Poulson's Adv.*

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Molasses for Preserving Fruit.—As economy is the order of the day, permit me through the medium of your paper to communicate to our ladies, a receipt for preparing molasses for preserving fruit, &c. which renders it much better suited for that purpose, than a syrup prepared from the best loaf sugar, as it is not so liable to candy, nor (if well prepared) to ferment.

Take 8 lbs. molasses, bright New-Orleans, or Sugar-house.
8 lbs. pure water.
1 lb. coarsely powdered charcoal.

Boil for 20 minutes, then strain through fine flannel, double—put it again in the kettle with the white of an egg, and boil gently, till it forms a syrup of proper consistence, and strain again. I should not trouble you with the above, but I am satisfied that those who make the experiment will be so well pleased with it, as to recommend it to their acquaintances generally.

Yours, &c. G.—*Vir. Herald.*

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Brook's Patent Silk Spinner.—A very ingenious machine for spinning and twisting silk has lately been invented by Mr. Adam Brooks, of Scituate, Mass. and has been for some days past exhibited at the Agricultural Warehouse and the Rooms of the Mass. Horticultural Society in Boston. It has been highly recommended by the best judges for the following properties, as stated by Rev. Samuel Deane, viz.:

"It performs three operations at the same time. 1. Reeling from the cocoon: and in this operation it has an obvious advantage over the Piedmontese Reel in the arranging of the guide wires so as to avoid tangling and breaking the filaments of silk. 2. Spinning or twisting the silk This being done immediately as it is drawn from the cocoons, while properly moistened, and its natural glue softened, the silk runs in a perfectly even thread. 3. Doubling and twisting." These processes being performed at once, and before the glue of the silk has hardened, give advantages, which can be obtained by no other machinery heretofore invented. The apparatus is small, not complicated, well adapted to domestic use, and it appears to us calculated to introduce as important an era in the manufacture of silk as the inventions of Arkwright and Whitney produced in that of cotton.—*N. E. Far.*

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Curiously Grafted Apple Tree.—Mr. Argule, Golnitz, in Altenburg, has in his garden an apple tree, which in the year 1816, bore 236 sorts of apples and other fruits; in fact, the tree has on it above 300 sorts, but those last grafted have not yet borne. This gentleman has effected this curiosity for his amusement by inoculating and grafting, and has fastened to every branch a little board with the name of the sort of the apple it bears. The tree has a strange appearance from the various shape and colour of the leaves, blossom and fruit. Many years ago, the Russians bivouacked near this tree, and were so surprised at the strange shape of it, and the number of little boards, that they did not injure it, though they cut down other fruit trees for firewood.—*Poulson.*